THE

SOUTHERN AGRICULTURIST.

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PART I.

EDITORIAL AND ORIGINAL.

Address, delivered before the Agricultural Society of Beaufort, by J. M. VERDIER, *Vice-President, at the Anniversary Meeting on the 15th June last.*

GENTLEMEN—

WE are associated for the purpose of promoting sociability, of interchanging ideas on subjects appertaining to our profession as planters, and of using such means as may be in our power of advancing the interests of that pursuit which is so essentially connected with the happiness and comfort of the human family. That such associations may become useful auxiliaries in the advancement of any art or science, experience has fully demonstrated; or why is it that most other professions have their societies, in which they concentrate the various knowledge possessed by individuals, compare their different views, and by collision of minds, make a nearer approximation to, if they do not actually arrive at the truth.

But this is more important in agricultural pursuits than in any other, inasmuch as that it is a science which depends wholly on experiment as the true test of the correctness of its principles, for the most ingenious theory (if when reduced to practice should fail of its object) must be condemned as fanciful and useless. It becomes then all important to its improvement that the various experiments or plans pursued in its several branches, should be compared in order that their results may be ascertained, and the benefits of them extensively diffused. Hence these associations both in Europe and our own

country, but more especially in the Northern States, (where they have been carried on with spirit and energy,) have proved highly conducive to the public benefit, by the competition which they have excited amongst farmers, by improving the breed of domestic animals, by raising funds and importing a superior stock from abroad, and by the introduction of new and useful implements of agriculture, which have lessened the labor and facilitated the operations of the farmer. The advantages of an agricultural association were never more clearly proved than in the case of the cold and ungenial climate of Scotland; the agriculture of which has received an impulse and derived an improvement from an association of this kind of which it was considered as utterly unsusceptible. These associations are also calculated to counteract that tendency to retirement which is one of the characteristics of the planter. Pursuing his vocation at a distance from others, and feeling himself in a great degree independent of his fellow men, he naturally becomes secluded from society, and this is apt to beget selfishness of disposition, by weakening his sympathies for mankind. To draw some then from their retirement, to rouse others from their indolence, and to inspire all with a generous emulation of improving their modes of culture, and thereby promoting their own interests and advancing the general weal, these are the legitimate objects of agricultural associations, when properly conducted.

But the science of agriculture commends itself to us as one of paramount importance, and next to religion, the subject in which the "family of mankind are most deeply interested." Taken in its most extensive signification, agriculture is that science which explains the art or means of cultivating or improving the earth or soil so as to render it fertile and productive. In this view it comprehends the nature of climate and soil, the methods of performing the different operations that are requisite in the cultivation and improvement of arable and grass land, the growing and preserving of different sorts of crops, the raising various kinds of seeds, the management of artificial and natural grasses, the cultivating and preserving of fruits, the planting of timber trees, the inventing of implements, the constructing of farm buildings, the rearing and general management of all sorts of stock, the constructing of roads and canals, &c., &c., the source

whence mankind derive the necessaries of life, viz: food and clothing; it lies at the foundation of human comfort and happiness, and tends to ameliorate the condition of human society. It has therefore been coeval with the existence of the human race, and has attracted the attention of the wisest and best of men; been practised by kings, eulogised by orators, and sung in the harmonious strains of poets, from the "weeks and days" of Hesiod and the Georgicks of Virgil down to the Loves of the Plants of Darwin.

The ancient Romans esteemed agriculture such an honorable employment, that in the earliest times of the Republic, the highest praise that could be given to a man, was that he cultivated well his own spot of ground. The most illustrious senators applied themselves to the profession, and their greatest generals at their return from the toils of war, were impatient until they were again employed in cultivating their land, and thought it no disgrace to follow the plough, though they were at the same time prepared to serve the wants of the Republic, attend her councils, and put themselves at the head of her armies. Men of consular dignity looked upon it as a reward for their services, when they obtained leave to return into the country, and Marcus Cato, the illustrious Roman general, orator, politician, and lawyer, after having governed provinces and subdued nations, did not think it below his dignity to write a large treatise on agriculture. Cincinnatus was called from the plough to be invested with the supreme command, and our own Washington, the great and good, took the greatest pleasure in rural pursuits, and left them with reluctance to perform the public duties to which he was so frequently called by the partiality of his countrymen.

The pursuit of agriculture is a source of innocent pleasure, is favorable to the growth of virtue, and tends to the exaltation of the human character. Depending upon Providence for a blessing on his efforts, the farmer naturally looks upward to Him who sendeth the "early and the latter rain," and without whose assistance nothing can prosper. Gazing around on the beauties of creation, as displayed in the plants and flowers which enamel the fields over which he roams, he views in them the hand of an all-wise and beneficent Creator, who formed them for his gratification, and thus "looks

through nature up to nature's God." Far removed from "the hum of the busy multitude," he pursues his vocation in retirement, and thence naturally turns his thoughts within and acquires habits of reflection and contemplation, which expand his mind, improve his moral feelings, and bring him into communion with his Maker. The attention may thus be insensibly seduced from the present object of the senses and the thoughts, accustomed to dwell on the past, the distant, or the future, and in the same proportion in which this effort is in any instance accomplished, the man as Dr. Johnson has justly remarked, "is exalted in the scale of intellectual being." Without agriculture, no art or trade could flourish, as it furnishes materials for them all. Without the raw material, the manufacturer must suspend the operations of his loom, the merchant must close his counting-house, and the mariner fold his sails, as the life-blood of commerce would fail, and all other trades would languish for want of the necessary aliment. Formerly agriculture was considered as a mere mechanical art, without fixed principles, and therefore depending entirely on practical skill. But this idea is now completely exploded, and owing to the labors of Lavoisier, Chaptal, Davy and others, it has been demonstrated that the principles of agriculture are founded in nature, and require as much study and research to understand them as any other science; indeed that it is the most difficult of all sciences, inasmuch as that a considerable knowledge of many other sciences is requisite in order to excel in this. Indeed, science, by which is to be understood that knowledge which is founded on the principles of nature, illustrated by demonstration, is the pilot that must steer us into these hitherto unexplored regions, where a mine of wealth is in store for the agriculturist. Chemistry, mineralogy, botany, entomology and mechanics, are required but to be invited to guide and to warn us. The knowledge of chemistry to the agriculturist is all important. This science informs how plants derive their aliment partly from the earth by means of their roots, and partly from the atmosphere by means of the leaves, imbibing hydrogen and carbonic acid gas; the carbon is appropriated to their own use, and the oxygen is given back to the atmosphere—(hence the importance of preserving the leaves of any growing plant from spoliation.) It informs us that the more vigorous the growth

of the plant, the greater draught it takes from the atmosphere, hence the importance of applying stimulating manures to invigorate their growth. It enables us to analyze the properties of those substances which afford pabulum for plants, such for instance as geine, which is the result of the decomposition of bodies, and which by undergoing a chemical process in the laboratory of nature, becomes fitted to afford sustenance for the vegetable tribe. Thus it has been ascertained that carbonic acid gas is a great nourishment of plants, and hence the importance of preventing its escape from the manures that are intended to be applied to any crop—and therefore the policy of using these manures in an unfermented state, that when the carbonic acid is evolved in the process of fermentation, it may not escape into the atmosphere, but be mixed up with the soil, and thus add to its fertility. Chemistry enables us to analyze the constituent properties of roots, and ascertain what may be the elements of their formation—whence we may arrive at a knowledge of the kind of manure which is most appropriate to its nature. As for instance, with regard to the article of wheat, it has been found by analysis that lime enters largely into its composition, hence the explanation of the fact, that wheat thrives best on calcareous soils, and will not succeed where lime is absent. Mineralogy teaches us as to the various kinds of earth of which the earth is composed, which being compounded together in various proportions form the varieties of soils. Thus it is said by mineralogists that there are but three kinds of earth which form nearly the whole of the known globe, viz: Silicious, aluminous and calcareous—the first of which, in its purest state, forms rock crystal. The purest and whitest sand may be considered as silicious earth in agriculture, though none is presented by nature entirely free from other ingredients. Aluminous or argillaceous earth is also white when pure, is of an adhesive quality when dry, absorbs water rapidly, and when wet is smooth and soapy to the touch; by burning, it becomes hard as stone: clays derive their adhesiveness from their proportion of aluminous earth. Calcareous earth, or carbonate of lime is lime combined with carbonic acid, and may be converted into pure or quick-lime by heat, and by exposure to the air returns to its former state of calcareous earth. The mixture of these three earths in due proportion, will

correct the defects of all, and with a sufficiency of animal or vegetable putrescent matter soluble in water, a soil is formed, in which plants can extend their roots freely, and yet be firmly supported, and derive all the needful supplies of air, water, and warmth, without being oppressed with too much of either.

Entomology, and that branch of zoology, which appertains to worms, furnishes another subject of scientific research, most interesting and important to agriculture.

Botany, which treats of the structure, economy, properties, uses and diseases of roots, a correct knowledge of which tends to increase their number and improve their quality, offers valuable truths to the agriculturist. The knowledge of this science furnishes the mind with a source of much and ever varying amusement. The faculties of the mind which are brought into exercise in the pursuit of this study, are such as conduce to its improvement as well as gratification. An amusement so rational, while it purifies and elevates the feelings, fills up much of the vacant hours of life, which often from no other cause than the absence of occupation or a pursuit, are spent in unprofitable amusements, sensual indulgencies, or vicious and degrading excesses. An improved mind derives from an acquaintance with botany much and rich food for philosophical reflection. Take the phenomena of vegetation, says a writer in the North American Review, "and what a secret world of wonders is there in every plant. Growth, vegetable growth, which to the ignorant is a bare and naked fact, is to scientific eye, a history—a whole history of things, the most interesting to every intelligent mind. Survey it in the dark and senseless earth until it rises up to the stately plant or towering forest tree; trace the firm and tough fibres which give it strength to resist the storms amidst which it flourishes; observe the ducts and channels carefully laid in it to convey streams from the rich fountains of life below; mark its numerous cells, those secret laboratories of nature. Survey all this exquisite and wonderful workmanship, and who, I ask, would not know something of all this? Who would not give a little time to procure so great satisfaction? Who would be content to pass one spring season and not know something of these most curious and wonderful processes that are going on around him?"

From this brief view of the advantages and pleasures of agriculture and the sciences intimately connected with it, we are led to perceive its importance and extent, and close connexion with our comfort and happiness in our present state of being. Associated for the purpose of advancing its improvement, and urged by the strongest of motives, viz: self-interest,—it behoves us to exert our energies in promoting the object we profess to have in view. That the existing state of things in this section of country calls for extraordinary exertions, is obvious to all. The sterility of our lands, produced by an injudicious and scourging mode of culture, and the failure of the crop of our principal staple for a series of years, prove beyond all doubt that there is a radical defect in our usual system of cultivation, and if a remedy be not found for the evil, the spirit of emigration to the rich lands of the West will in time depopulate our State, and Carolina will once more become a wilderness. What then is the remedy for the evils under which we labor? And here, gentlemen, I regret my inability to throw any new light on this important matter. Feeling my deficiencies as a planter, I could have wished that the task you have assigned me had devolved on one more experienced and scientific than myself. But as you have assigned the duty to me, I shall take occasion to offer some general considerations which may not be altogether irrelevant to the subject before us. It strikes me that much of our ill success in making crops of late is owing to a deficiency of manure, our want of information of its nature, and of the most proper mode of applying it. Our naturally light soils, composed chiefly of silicious sand and decayed vegetable matter, have become exhausted by successive cultivation, which has deprived them of almost all the nutritious matter contained in them, and left them nearly sterile. To resuscitate these unproductive soils is the great point to be aimed at by the planter, and which can only be effected by a system of effectual and persevering manuring. The difference between a well-dressed field, and one which has been planted without this important aid to nature, must strike the most careless observer. While the one presents that pleasing view which affords gratification to the beholder, the other excites a feeling of disgust and disappointment. I am persuaded, says Dugald Stewart, that I speak in perfect

conformity to the common feelings and common language of mankind, when I say that nothing is more beautiful than a well dressed field. Such too was the opinion of Cicero, who says, "Agro bene eulto nihil potestess—nec usa aberius, nec specie arnatius."

The application of manure to our land is so essential to the successful raising of our great staple, that I feel justified in adopting the language of Chaptal, as applied to the agriculture of France, and say that "without manure there is no harvest."

The application of manure to the soil acts directly and indirectly on the growing crop, as it not only stimulates the plant by affording it the pabulum which it needs, but it gives to our hungry and thirsty soils the facility of attracting moisture from the atmosphere, which is of great importance in seasons of drought like the present. For, says Davy, I have compared the energy with which various soils absorb humidity from the atmosphere, and have uniformly found that the most fertile possessed this power in the greatest degree—so much so, that the fertility of soils might be estimated or classed according to it. A kind Providence has furnished us with an inexhaustible supply of materials for the best manure. The margins of our rivers and creeks abound with marsh grass and mud, which, when intermixed with the excrement and urine of animals will impart (if judiciously) applied, new strength and vigor to the most impoverished soils. It seems then that industry and energy, with a better knowledge of the nature and habits of plants, which is to be obtained by the study of the physical sciences, and particularly chemistry, are all that is wanting under Providence, to improve our lands, and to increase our crops. I would also beg leave to suggest to you the importance of observing a rotation of crops. This matter is so well understood in Europe that it is strictly adhered to by the best farmers, and were it more attended to among us, might perhaps prevent that rapid impoverishment of land which is the certain consequence of the successive culture of the same plant. It is true that the number of our productions is so limited as to admit of no great variety—but I have no doubt but that planting the same field alternately with cotton and corn, or other grain, would cause the crop to be more productive and impoverish the land less. That all plants, like animals,

have their peculiar force which they draw from the soil, seems to be a fact established beyond doubt, and of which the soil becomes deprived by successive cultivation of the same species of plants. Unless this is restored to the soil by nature or by art, the same plants will not thrive therein, but drag out a feeble and sickly existence, because they are deprived of their peculiar aliment, when perhaps a plant of a different species might exhibit a much more vigorous growth, from finding in the soil that nutriment which not being consumed by its predecessor, remained for the benefit of its successors of a different family. The formation of those salts or materials, says Mirbel, which excite or sustain the growth of plants is slow when spontaneous, and the result of regular chemical changes which have been at work for centuries; and when the natural and limited supply is exhausted, and soon it must be if successive crops of the same kind are forced upon the soil, the plants will look yellow and shabby; each year renders it more worthless, until finally not enough will grow to repay cultivation. Let the crop perish where it grew, and the earth will reassume the minerals and salts extracted from it. The frequent changing then of the object of culture might enable the cultivator to plant the same field more frequently, and in this view the annual application of manure might, in many cases, be dispensed with without lessening the probability of a good yield from the growing crop.

The last topic to which I beg leave to call your attention, is the necessity of a more united action on the part of the planting interest to extort that encouragement from the justice of the Legislature, which is denied us by its favor. That a culpable, not to say stupid, indifference to the agricultural interest of the State prevails in our Legislature, is manifest to all. Drawing, as the State does, nine-tenths of its income from the tax on the property of planters, yet she will do nothing to assist them. While our sister States are holding out every possible encouragement to farmers in the way of premiums, to stimulate their efforts and induce them to undertake the growth of new productions, our State does nothing—while the subject of producing silk is engaging the attention of almost every State in the Union, and nine of which have offered premiums for the purpose of encouraging

the undertaking, the Legislature of South-Carolina takes no notice of the matter. Memorial after memorial from Agricultural Societies, in relation to this subject, are either entirely disregarded, or are laid on the table, or go to sleep in the Committee rooms. Ought this so to be? If our legislators are so blind to the interest of the State as to neglect those who furnish the chief part of its income, it is high time that planters should be roused up from the lethargy which benumbs them, and make themselves heard in the legislative halls, by electing from amongst themselves, the most efficient and energetic men who will see that their interests are properly attended to. I recommend then, gentlemen, that the proposition of some of our sister societies for an Agricultural Convention, when these points may be discussed, and a course of action agreed upon, should be responded to with alacrity by this Society, and delegates appointed. At the same time I would beg leave to suggest that perhaps a Convention, to assemble in the city of Charleston, a short time previous to the meeting of the Legislature, would be preferable to the assembling during the session at Columbia, inasmuch as that more time would be allowed to deliberate on the matter brought before them, and to prepare their memorials to that body. The want of influence of the planting interest arises solely from a want of union. Let them but concentrate their forces on one point, and their influence would be irresistible. Let not the spirit which now prevails evaporate in words, but by united and vigorous action, let us contend for our rights, and if we are only true to ourselves, victory will be ours.

Proceedings of the Horticultural Society.

At the Anniversary Meeting of the Horticultural Society of Charleston, on the 14th August last, the following Officers were elected, viz:

NATHANIEL HEYWARD, *President.*
THOMAS BENNETT, *Vice-President.*
Dr. ELIAS HORLBECK, *Corresponding Secretary.*
WILLIAM KUNHARDT. *Treasurer.*
JOSEPH F. O'HEAR, *Recording Secretary.*

Standing Committee.—Dr. Joseph Johnson, Dr. Eli Geddings, J. A. Winthrop, Robert Hume, James Bancroft, R. L. Baker, T. J. Kerr, Richard Teasdale.

The following Report of the Standing Committee for the past year was then submitted to the Society, by their Chairman, Dr. JOHNSON, and confirmed.

Mr. President and Gentlemen:—

VARIOUS unfortunate circumstances have embarrassed the proceedings of your Committee during the past year. The depression, in consequence of the fire and the epidemic, prevented that attention to horticultural pursuits, which have hitherto excited corresponding interests in those who cultivate, and those who promote horticulture. The tardy appointment of your Committee, and the very unfavorable seasons, both in summer and winter, for many of the most interesting objects of our attention, have certainly prevented this Report from being more general and correct. The severity of the seasons prevented the usual display of horticultural beauties and varieties at the exhibitions. Still the benefits derived from the establishment of our Society are annually increasing in every respect. First, a taste for gardening was to be acquired by many, and improved by all. Next, emulation was to be encouraged, and competitors for the premiums of this Society were soon found among the most distinguished citizens of the State, and among the ladies—the brightest ornaments of society. Next were enlisted, talents, enterprise, industry and capital in the advancement of horticulture; even the promotion of health became auxiliary to its improvement. A much greater quantity of land is now cultivated with vegetables for Charleston market than formerly, and cultivated with much more skill, industry, and effect. The quality of the produce is now much improved—the profits are greater to those engaged in the cul-

tivation, and the inhabitants are better supplied with fresh wholesome vegetable food, well suited to the warmth of the climate. Few, if any vegetable markets in the United States, excel that of Charleston.

Mr. Alex. McDonald deserves much credit for his zeal and taste in his collections of ornamental plants; many of which are not in the possession of any other person in this city. To him is awarded the premium for his elegant Rhododendron Russilianum; also, Cactus Splendens, and other fine varieties; likewise, a premium for his rare collection of Amaryllis, the varieties of which it is desirable to see more cultivated among us.

To Mr. Thomas Bennett, for his usual collection of various, beautiful, and rare plants, and for his untiring zeal in introducing new and costly Exotics, a gold medal is awarded.

Mr. John Michels' shew of Roses were unrivalled; his present collections embraces almost every variety.—Many of his exotics are rare, and already known to the Society. A silver medal is awarded to him for his Roses, and another for his Dwarf Banana now bearing fruit.

Mr. James Legare has a fine collection of Roses, Camelia Japonica, and other elegant plants, which he continues to increase. He has been at much expense in erecting a greenhouse, and will probably have it well filled in another year. For his taste in laying out his grounds, and the excellent arrangement of his plants, a silver medal is awarded to him.

Col. Lucas' collection of Camelias is doubtless the largest and finest known among us. It is regretted that he has lost the names of the greater part of them, which renders it impossible to specify the best. For this elegant collection of Camelia Japonicas, a silver medal is awarded to him.

Mr. Gonzales has a number of fine plants; among them are the Chinese Sweet Lemon, fourteen feet high, and in full bearing; the Peruvian Guava, and the Jujube tree. His collection of Japonicas, although not large, is very select. A silver medal is awarded to him for the introduction and successful cultivation of the Sweet Lemon.

Mr. J. F. Green has a beautiful collection of Roses, some of which are new and not in the collection of any other in Charleston. For his Rosa Golconda, a splendid

variety of Running Rose, a silver medal is awarded to him. He has also in his garden, the English Privet, which, when in bloom, is a shrub of great beauty. It is recommended to all amateur gardeners for a hedge, as it does not grow so high as to require troublesome trimming.

Mrs. Mary Davis has succeeded with her Tulips and Hyacinths in an eminent degree. Hers was the largest collection and most beautiful varieties seen. Her early Ranunculus' were also fine. A visit to her green-house was very gratifying; the plants looked all in fine order. Among her Exotics is a very beautiful plant—the Gardinia Azorica—a beautiful addition to collections of this kind. A silver medal is awarded to Mrs. Davis for her Tulips and Hyacinths.

Mrs. Wagner had the good fortune to preserve the most of her green-house plants from the severity of the frost in March. Hers was almost the only collection of Pellagoniums (Geraniums) that were preserved. To her is awarded a silver medal for her beautiful collection of Geraniums.

Mr. Howard has had some fine Roses and other rare plants in his collection during the last year, most of which are familiar to us. For his Philadelphus Coronarius, *(Syringa Lanciniata,)* a silver medal is awarded, and another for his Amaryllis Undulatiflora, a rare and beautiful variety, which was omitted in the last year's report.

Mr. Giles has the most splendid variety of Ranunculus. They were brought by him from France last year, and were not numerous, but remarkable rich and varied in colours, and very double. For these, a silver medal is awarded.

Col. Condy's collection of Roses, although not very extensive, is very select; and it is hoped that in another year, he may be a competitor for the honors of Flora.

Mr. Hedley exhibited Pioneas (Rosia fragrans) which were exceedingly beautiful and much admired. A more general culture of this fine flower is recommended by your Committee.

Mr. Jos. A. Winthrop has been particularly successful in the culture of the Rhododendrons. Several varieties bloomed in his garden; one of which, the Catawbience, was exceedingly beautiful, although exposed to the severe cold in March; the flower-buds were not affected, as in the other kinds, and it bloomed much later than

usual. To him is awarded a silver medal for his Rhododendron Catawbience.

The gardens of Mrs. Cochran, Mrs. Ripley, and Mrs. La Bruce, and many others, as your Committee learn, are filled with choice plants; but the extremely warm weather has been very injurious to many of them.

Mr. Gray has added to his collection of superior Dalias and Roses: it is to be regretted that he has not a large piece of ground to display his taste as a gardener—his knowledge as a Botanist, and his skill in the cultivation of a nursery.

Mr. Richard Teasdale has a good collection of Dalias and Roses; his gardener, Mr. Turner, has been eminently successful in the cultivation of Japonicas, from cuttings, of which he has a great variety, well grown.

The vegetable market has been supplied throughout the season with a great variety and abundance of choice vegetables. The market farmers have increased in numbers, being now estimated at more than sixty, exclusive of the gardens within the city and on the Neck, from which very considerable supplies are vended in the public markets.

The following premiums are recommended by the Committee, and confirmed by the Society:—

To Mrs. Fred. Rutledge,	for Cauliflowers,	A Silver Medal.
" Mr. Jas. Bancroft,	" Artichokes.	"
" Mr, Fred. Winthrop,	" Brocoli,	"
" Mr. Ed. Barnwell, jr.	" Madeira Onions,	"
" Mr. J. J. Lapenne,	" Guinea Squashes,	"
" Mr. James Legare,	" Kohl Rabbi,	"

The following persons exhibited specimens highly deserving of commendation:—

J. Hartman, Irish Potatoes, Turnips and Onions.
Richard Teasdale, Artichokes and Lettuce.
Rev. Mr. Bachman, very fine Cauliflowers.
Capt. Williamson, Onions, Butter Lettuce, and early Potatoes.
Jos. F. O'Hear, Potatoes and Beets.

The fruit of almost every kind has been very much injured, and some destroyed by the heavy fall of sleet and snow on the 4th of March. Some trees have been killed by it. The very fine Peaches of Mr. Busacker merit the premium; but it cannot be conferred, as he has already had a medal for the same fruit, from one at least, of the same trees.

The following premiums are recommended by the Committee and confirmed by the Society :—

To Mr. Francis Michel, for the earliest		fine Peaches,	A Silver Medal.
" Mr. George Spidle, for the best		Nectarines,	"
" Mr. Edward Barnwell, jr.	"	Strawberries,	"
" Dr. F. Y. Porcher,	"	Watermelons,	"
" Mr. John Hume,	"	Muskmelons,	"

Mr. Paul Remley, a premium of ten dollars for his successful method of obtaining fine Peaches from trees, which could not mature them previously.

The attention of the Society and of the public is recommended to the nursery of Mr. Gilliman particularly, for the finest varieties of Pears.

Col. Condy has been very successful, in removing the last winter, a large number of fine pear trees from his farm, to his garden in Cannonborough, which had attained considerable size, some of which bore fruit the present season.

The farms of Ed. Barnwell, jr., C. W. Simons, Wm. McLean, J. Hartman, A. G. Rose, Estate of G. W. Cross, Dr. Desel, J. T. Turner, —— Noisette, and Joseph S. Paine, exhibit strong evidences of judicious cultivation.

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Mr. Paul Remley's mode of producing fine sound Peaches, from trees previously unproductive.

I opened the roots near the trunk, in the latter part of the winter to retard the vegetation and expose the worms. I searched the roots where joined to the trunk, and where gum oozed from them, and scraped it away, killing the worms and destroying their eggs. I then directed chamber lie to be thrown daily round the roots of the trees near the trunks until the 1st of May. When the trees budded, I had the hole round the roots filled with marsh-mud, and some of them with marsh-mud and clay, in equal proportions, extending up to the hard bark of the tree. Over this I threw the poorest sandy earth that I could find, all round under the branches of the trees, and excluded all stable manure from the trunks. If any grass grew up through the sand, I had it hoed from under the trees. When the trees are not vigorous in their growth, I dig a trench round them from three to six feet off from the trunk, according to the size of the tree, and throw manure into that trench, and cover it with barren sand. This is the third summer of my own-

ing these peach trees—two of them were out in the field among vegetables, none were in the yard among the poultry. In the first summer, none of the fruit was matured or worth eating. In the second year they were very fine, sound, healthy, and profitable. This year, equally fine, perhaps better flavored, more productive, and more profitable.

PAUL REMLEY.

Charleston, July 12, 1839.

On Improving Worn-out Lands.

Dear Sir,—In your last favor you say, "that about three years ago I published an article in your Journal, wherein I recommended the owners of poor lands to improve them, by planting a crop of small grain; then peas, broadcast; and these to be ploughed under before hard frost, for the next year's culture." This, I said, was the practice in Georgia. At your request I am now prepared to testify to the excellence of the suggestion, by my own, and the experience of others. To any kind of soil, green matter, turned under, is ever an advantage, because it returns to the earth what it takes; and much that it has absorbed from water and the atmosphere. However, a few general remarks are necessary before I give you "my say."

It seems that near every exhausted soil in this State, there is some material in approximation to revive it—that, is clay or marl, high sandy lands, and vegetable matter in a state of nature, or to be produced by culture, nigh all of them. And to one or more of these materials, must we look for the renovation of the soil. By mechanical or chemical combinations, it may be made susceptible of improvement; but after all vegetable matter in decomposition, or any substance, that when decomposing, will give out the elementary principles of vegetables, such as carbon, hydrogen, and oxygen, constitute the food of plants. Moreover, it will be found in the culture of corn and cotton, or in any other crop planted in as large quantities to the hand; as we do, the soil must be invested by some material in approximity, or the yield

will not pay for the cost of manuring. Manures that act as chemical agents, that is that induce the decomposition of the vegetable matter may be fetched from a distance; but it will be found that, for any other purposes, their expensiveness will not pay the planter in the yield of short cotton. If these premises be correct, of which my attention to manures has assured me, the first questions for the owner of poor lands to ask of himself are :— 1st. What is the nature of my soil?—is it chiefly clay, or marl, or sand; or combined of those three original earths? 2dly. What vegetable matter have I nigh me, or if none, or not in sufficient quantities, how shall I procure it?

To the first inquiry, after he is answered, he will then say—*that soil which absorbs most moisture from the atmosphere, and readily gives it out, is the best for cultivation;* and that a due admixture of clay, sand, and marl, presents the soil desired; and if there is no marl at hand,—clay, mixed with sand, and gravel or sand, mixed with clay, he may use as next in value. Now, to make these combinations of soils, either of two plans may be selected. The first and most effectual would be, to cart into the field, that one, or more of "the original earths" required; and plough them in: the second would be to mix them in the cow-pen and stable with the manure, to be carted out. Having in this way *created a soil susceptible of being improved by manure*, the planter should then look to the second question; which, because of its importance, I shall dwell on somewhat at large.

To the second question. If the planter has an abundance of dry leaves at hand, he may use them; if not, he may plant rye or wheat; which, being winter growths, can be turned under for the spring crop. And as I am satisfied that the planters of short cotton in the middle and upper country will sooner or later have to use dry or green vegetable matter as a manure, to the relative value of each, let me call your attention. I must also request you to bear in mind, that I intend my remarks to be applied chiefly to the middle country, the dry vegetable matter of whose high lands is less decomposable than that of the sea-board; and, therefore, must be used with more preparation for *instant crops.*

I have used dry leaves both for corn and cotton beneficially on sandy lands: how much more so then would they be on cold, stiff, moist soils, you may easily conceive. I have *noticed* that those leaves which produced

the most *potash* or the most *gum*, are best. Not because of the greater proportion of ligneous matter in them, but, because such leaves are more readily decomposable than than others, and their nutritious particles more soluble in water, in which form, the roots of plants consume them. The gum leaf, *for a present crop*, is the first, then the hickory, then the oak; and, lastly, pine trash. The leaves of the yellow pine cannot be used for a present crop, for they are *resinous*, and for nearly a year *insoluble* in *water*, or, in other words, indecomposable. Dry leaves yield one-seventh of themselves in manure; warm the earth in their act of decomposition; and, by opening fissures in it, admit air to the roots of plants: yet, they are by no means so valuable, as the turning under of green vegetable matter; because, *they cost more and do not afford the same nourishment.*

I selected the best hand on my place, the driver himself, and ordered him to see how many loads of gum or oak leaves he could rake and cart in one day; and though the leaves were close at hand, the result was but five loads. He might have carted more, but the difficulty was in the filling of the cart. We have no utensil, and, indeed, it would be difficult to invent one with which to load; so in "my parts," we have to use a basket, and trample the leaves in it, and then in the cart. With pine trash, we might use the ordinary fork, but the oak leaves fall through its prongs. I allow then that the driver, horse and cart are worth fifty cents a day; I would not hire the same under one dollar. Now I am satisfied by experiment, that not less than one hundred cart loads of leaves to the acre will benefit cotton land, so as to make an *impression* on it; and to cart there, it would take twenty days, and therefore cost ten dollars.

Now, let us plant rye in September, to be turned under in June or July, *while in flower*, with a broadcast of peas; and then to be ploughed in before hard frost, for the spring culture.

One single plough, planting an acre or more per day, is - - -	$ 37½
Half bushel of rye to the acre, or less, -	50
One single plough, to plant peas broadcast,	37½
One bushel peas, or less, - -	1 00
One double plough to turn under pea stuble,	62½
	$2 87½

Two 87½ dollars deducted from ten, leaves a balance of seven 12½ dollars in favor of green vegetable matter. And this is not all, it has been discovered by chemical analysis, *that while green vegetable matter contains one-fourth of manure, dry vegetables contain but one-seventh.*

But let me take another view. Suppose that by some invention or improvement in the construction of the cart and fork, a hand might increase the number of loads carried in a day, could one have the smallest hope that he would accomplish twenty; or if he did, that is, reduce the price of carting, leaves to $2 87½ the acre, would it be as valuable as green vegetable matter, which turns out nearly double the quantity of manure? But it may be said, that one hundred cart loads of leaves, though containing *relatively* less, will turn out on account of bulk, or quantity, or weight, more manure than a crop of rye to the acre. To this I reply, that to produce the same effect on the acre as rye, the leaves must be double its *weight;* and, that they are not, you may decide, should you have ever seen the rye in flower, compared with one hundred cart loads of leaves strewed over an acre. The one may contain more bulk, but the former is heavier, and will afford more manure to the soil, independent of the pea stubble, the nutritious qualities of which have been too long known to be denied.

However, I need not inform you how much green vegetable matter is valued as a manure: the books are full of its praise, and none presents a greater number of proofs of its effect than Chaptal's. Whoever uses this manure should not forget *that green vegetable matter should be turned under while in flower, or before it goes to seed.*

Chaptal says, page 94—"In order fully to understand this doctrine, which appears to me of great importance to agriculture, it is necessary to consider the successive changes which take place in annual plants during their growth; first, they produce green leaves, which by coming in contact with the air, receive from it the principles of which I have spoken; subsequently the stalks increase in size and number, and are covered with numerous leaves, which absorb from the atmosphere a degree of nourishment suited to the increasing wants of the plants; the strength, fullness, and depth of hue of the leaves and the stalks, particularly of the latter, increase in proportion to the richness of the soil.

"This state continues till after the period of *flowering*, when a change, worthy of note, takes place; the roots dry up, the stalks wither, and change their colors; and when fructification is at length completed, both roots and stalks have become mere skeletons, which answer but little purpose either for nourishing animals, or manuring earth. During this period of vegetation, what becomes of the juices that were so abundant in the roots and stalks? *They have been consumed by the formation of the seeds.*

To illustrate this, he gives the experiment of M. Matthieu de Dombasle. This gentleman on the 26th June, 1820, at their time of *flowering*, within a small space, selected forty wheat plants of equal size and strength, each having three stalks bearing heads; he pulled twenty of them, with all their roots, and left the rest to complete their fructification. Having carefully freed from earth the roots of those he had taken up, he cut the stalks two inches above the base, and dried separately the roots, and the stalks surmounted by their heads."

The roots and the portion of the stalks remaining with them, weighed,	*grains,*	657
The stalks, heads, and leaves,	"	1946 5
Total,		2603 5

On the 28th August, the time of harvest, he plucked up the twenty plants which had been left for seed, separating the roots, and cutting the stalks as of the first; of these, the weight was as follows:

	GRAINS.
Roots,	419 53
Straw, husks and beards,	1318 75
Grain,	1025 69
Total,	2763 97

"During these two months, the roots and the portions of stalks adhering to them, had lost - - -		237 52
The stalks, heads and leaves had lost		624 67
Total loss,		862 19

"But as the seed weighed 1025 69 grains, the whole had increased in weight 160 47 grains, troy. From this experiment we may conclude, that the juices contained in plants, at the time of flowering, contributes to the for-

mation of the grain in the proportion of $\frac{862\ 19}{1025\ 97}$ and that the excess of the weight of the grain which $\frac{160\ 47}{1025\ 97}$ arises from the nourishment which the plant absorbs from the air or soil, during the two months of fructification."

From this experiment, we at once see the importance of turning under green crops while in flower, or before they go to seed. The effects of this process are then. 1st. Green matter returns to the soil nearly double that of stubble. 2d. By ploughing it under in flower, we have less grass to contend with the next spring. 3d. By exposing their roots to the sun or the coming frosts, many parasitic vegetables are destroyed; and decomposing, add something to the productiveness of the soil. 4th. By the destruction of roots and parasitic vegetables, less manure is taken from the soil during the winter. 5th. This matter decomposes, and is absorbed by the earth for *early* crops. 6th. The earth has not only received its first required ploughing, but is beneficially exposed to the winter frosts.

Your's, truly, C. R. C.

The advantage of giving preference to the Culture of Cotton over Silk.

Mr. Editor,—Whenever a Northern speculation is to be got up, every one interested sets to work by writing, and talking, and preaching to the Southerner, who is always the victim to be bamboozled by calculations and assertions—by jokes and promises of profit, that in sheer self defence, and to get rid of importunity, he swallows the bait; and whether it is preserved East-India yam ginger, *morus multicaulis*, or silk-worm eggs, made of fish roe, he takes the dose measured out for him, viz: *all* of the article that can be sold, and quietly pockets the loss, rather than be laughed at.

We *are*, or we have been *morus multicaulis* mad. It is possible some of our wise ones, who were cotton planters, may have cunningly anticipated their neighbors, and got a start of them (in the way of making millions of dollars) by at least a year. These folks are out of my reach by twelve months—they are too wise! and as I

cannot overtake them with my humble advice, I must be contented to offer it to those who have not yet abandoned the homely culture of cotton, for the splendid article that furnishes brocades and satins—that clothes the monarch when seated on his throne.

I am about to advocate the old staple article of cotton; to advise those who have cultivated it heretofore, not to give it up, but to stick close to it as long as it will sell—which will be as long as the world lasts.

Just before cotton was planted as a crop in Georgia, where it first began in America, silk was for a while all the rage in the shape of silk gauze. The ladies wore nothing else, and villages of weavers grew up in Scotland, supported altogether by this fabric. This article first raised the town of Paisley. But the fashion changed and the poor silk weavers sunk as fast as they rose—it was the vision of an hour.

Well, years passed over, and again the fashion of silk came up in another shape—something soft, light, and graceful; for the Grecian was all the order of the day. It lasted a year or so, and silk and silk weavers were again left in the lurch by the *silk weavers*—who cast their coats like the chrysalis, and came out as the butterfly in new and more splendid array, of a different kind of stuff. Then silk sunk again!—so, for a third time, all in my memory, until old Gaffer's time, the greatest changling of all, brought round the long waists of a hundred years ago—and with them the brocades and damask of the olden days of Queen Bess.

As my object is to shew that silk, as a culture, is not to be compared with cotton, I would observe seriously, to those who have not already changed, yet feel disposed to try silk, that while cotton is a substitute in a great measure for wool, either by using the cotton entirely in cloth, or by mixing it up with wool—silk cannot take the place of wool in any way. Again, while cotton has *almost altogether* taken the place of linen, throughout the world, silk cannot represent it at all. The great use of silk is for splendor, for velvets, damasks, lutestrings, gros de Naples, and other fine affairs. These have at present their day, instead of fine Cotton Cambrics, Muslins, Calicoes, and so forth—but even the fashion itself is in duration and proportion to the usefulness. In sixty years I have remarked that silk has been universally worn for purposes of dress (I mean for splendor) about

four or five times—each period lasting a year or two; while cotton in all its variety, and let me say in all its simple grace and beauty, has lasted all the intermediate times.

Forty years ago, cotton goods were about four to six times as high-priced, and not as good or as elegant in their texture and patterns. The fall in price, and the perfection with which they are now made—the infinite and beautiful varieties of the cotton manufacture, insure its continuance with the rich—its cheapness with the poor and middle classes. Within the last fifteen or twenty years, not a single yard of English manufactured cotton reached India, and now the export annually exceeds belief. All Asia may be said to be now wearing English manufactured cotton, and we all know that American cotton has been hitherto the support of these operations. From the first improvement in spinning and weaving apparatus, the use of cotton has been regularly advancing, and that as fast as the growth permitted it. The consumption has always been ahead of the growth; but this is entirely owing to its useful and *substituting* qualities—qualities which silk does not possess, and of which I wish in this paper to warn the cotton planters. Silk may do for the Northerners to raise, who *cannot* raise cotton—but it ought never to take the place of cotton where that *can* grow.

The first settlement of South-Carolina, it was said, was with a view to cultivate silk—but the inhabitants speedily found they could turn their industry even then, to better account. It was quickly abandoned.

The quantity of cotton raised is often the subject of discourse—but if your readers will take my view of it—viz. the quantity of labor saved in other countries by its being substituted for linen, &c., they will perceive that we are employed as agriculturists in raising for them, that which they use instead of growing flax, and to a great extent themselves, while the population of these very countries spoken of are employed in manufacturing our cotton, or raising grain for food. I allude especially to the North of Europe; to Germany, and even France.

But it will be said the writer is prejudiced and narrow minded—that an enlarged mind would see things in a very different light. I therefore give you the opinion of one of the best writers on the agriculture of Italy, on the subject of silk. One, whose mind was as capacious as

cultivated; and who, as far as we are concerned, may be considered as disinterested. He says: "But the manufacture of silk (he writes in 1800) for a length of time has been on the decline. The peasants continue to raise the silk-worm only because they cannot summon resolution to break through their old habits, nor to substitute fruit trees for those of the mulberry, and yet for years past, the profit has not paid them, by much, for their labor—even when no calamity befals them—and when they, in addition, bring into the account *the litter from the silk-worm, which makes a very excellent manure!* but these worms are subject to so many diseases, and so many accidents; the smallest neglect is so fatal; the heating of the litter kills them—rats, poultry, rain, thunder, all prove so destructive and to such numbers, that the peasant ought to esteem himself happy, if in four years he has been able to succeed in three. The cocoon, which formerly sold for 35 a 40 sols the pound, have fallen for years past to 24 and 25 sols—while all the expenses are doubled in value."*

This excellent and intelligent writer goes on to say.

"The culture of the mulberry and rearing the silk-worm (l'education du ver a soye) were an object of the greatest importance to Tuscany. In the valley of Nievole alone, these last consume in common years, eight millions of pounds weight of mulberry leaves, and produce 400,000 lbs. of cocoons. The capital in circulation from this manufacture reaches nearly 122,000 Florentine crowns. The silk† produced annually, before it is sent to Florence to be operated upon by other hands, has already required in its preparation in the valley of Nievole, 458,400 days work.‡

Having given you, Mr. Editor, these details confirmatory, I again call the attention of your readers to the facts I have stated, and am, respectfully, your old correspondent in your second volume.

SENEX.

* Simonde (de Sismondi) Tableau de l'agriculture Toscane.

† "37,600 lbs. *d'organzin.*
40,000 lbs. deflewret."

‡ *Note of Mons'r de Sismondi.*—"These calculations and results are to be found in a *memoir* addressed to the Academy of Georgifiles of Florence, on the best means of *succouring* the *manufacturers*—as the greatest part were manufacturers of silk, I was obliged to study and expose all these details.—*Ib.*

PART II.

SELECTIONS.

Of Lime.

[From the Edinburgh Encyclopædia.]

Lime has been regarded by some as a manure, by others as a stimulus, which can only be profitably applied where the soil possesses some dormant principle of fertility that needs to be roused into action. In fact, the *modus operandi* of lime is imperfectly understood, though the greater part of agriculturists seem pretty well acquainted with its effects. It is sufficiently understood, that land which has been long in grass, contains much vegetable matter, and that the trouble and expense of liming it will be amply repaid to the cultivator; but the propriety of applying lime on old arable lands has been questioned, and with much justice, by the most part of practical agriculturists, and their doubts on that head are confirmed by the fullest experience. If lime were a manure, then it would be a noble substance for enriching and restoring fertility to lands that were worn out by a succession of corn crops; but as worn out land is not restored to fertility by the application of lime, we are warranted to rank it in a different class, or, to speak more correctly, as an article calculated to bring certain principles into action, which were previously possessed by the soil. This conclusion is sanctioned by experience; and experience is a far better guide than the most plausible theory.

Lime has been used with very great success in every part of Great Britain, though it is evident that the grossest errors have been committed in the after management of land to which lime has been applied; and, what is worse, that the extent of these errors was in direct proportion to the effect produced upon the soil by the application. This remark applies more to the former state of husbandry than to the present practice, because the former rule was to crop so long as the earth would make a good return, without considering that a field, so treated, was not to be recovered for a century afterwards. Indeed, when lime duly operates, the whole powers of the soil are put in a state of requisition, and may be forced to act till the very soul of vegetation is extracted. It is scarcely practicable to restore fertility to land, even of the best natural quality, which has been thus abused; at least a considerable period must elapse before it can be restored to its original fertility; but thin moorish soils, after being exhausted by lime, are not to be restored. To lime them a second time, is not only a useless expenditure of labor and money, but also productive of

serious mischief. Soils of this description, after a second liming, are apt to singe and burn the grain that is sown upon them, and even when dunged, not to make such a return as would have been rendered under different circumstances.

It is a difficult matter to say at what period the use of lime was first introduced into Britain; but as it was well known to the Romans, there is good reason to believe, that by this ingenious people, the use of it was first brought into practice in this island. Be that as it may, this mineral after undergoing the process of calcination, has long been applied by British husbandmen as a stimulus to the soil, and, in consequence of such an application, luxuriant crops have been produced, even upon soils apparently of inferior quality, and which would have yielded crops of trifling value, had this auxiliary been withheld. In fact, the majority of soils cannot be cultivated with advantage till they are dressed with lime; and whether this beneficial effect shall be considered as an alterative, or as a stimulant, or as a manure, it will be found to be the basis of good husbandry, and of more use than all other manures put together. Wherever lime has been properly applied, it has constantly been found to prove as much superior to dung, as dung is to the rakings of roads, or the produce of a peat mire.

From a pretty long experience, and considerable attention to the operation of lime, we are inclined to think that it acts both as an alterative and a stimulant, operating in the one case as a medicine, that changes the nature of the soil, and in the other, as rousing, or bringing into action, the vegetable powers contained in the soil, which, without such an application, would have remained dormant and inactive. These opinions, we know are different from what have been maintained by several ingenious men on the subject; but they are supported by the result of numerous trials, undertaken to ascertain how, and in what manner, lime operated upon the soil, and whether it could be used in a hot or *effete* state with the most advantage. On these points, theoretical writers are apt to fall into mistakes; and therefore every theory not formed from facts, must be viewed as a romance which may amuse, but cannot instruct agriculturists.

The writer of this article, for a period of thirty years, has been in the regular habit of applying considerable quantities of lime; indeed few of his profession have used more of this useful article. In the majority of cases, the application has been highly beneficial to his interest, changing in a manner the very nature of the soil, and causing it to produce the most abundant crops; whereas in others, the article has been altogether useless, and in some instances the application has been followed by mischief instead of benefit. As most of these trials were executed upon a large scale, and upon soils of almost every different quality, more benefit may be gathered from a succinct account of them than from a long chain of argument. The trials are fairly stated, and the results may perhaps throw some light upon this abstruse subject.

It is proper to premise, that a good deal of uncertainty prevails with agriculturists, respecting the application of this article; and that much dispute has taken place among those who have applied it only to one kind of soil, or who have not used it under different circumstances. Some have contended, that lime ought to be applied only when it is in a hot powdered state; and that when it becomes *effete*, the effects are comparatively trifling and unavailing. Others maintain, that grass land is the best bed for the reception of lime, while many of our

most enlightened farmers strenuously affirm, that it is most judiciously used when the land gets a complete summer-fallow. It would not be difficult to prove, that each class of disputants, in the view they take of the subject, are equally in the right; and that they only condemn the system of others, because their own has turned out to be successful. Our opinion is, that, in every case where the land is constitutionally disposed to receive benefit from a calcareous dressing, *that is*, when it is refreshed by grass, or enriched by dung, it is of little importance, in respect of operation, whether lime is applied *hot* or *effete;* upon grass land, or upon fallow; and that convenience ought chiefly to be studied, when the most proper time for applying the article is to be ascertained. In point of economy, there can be no doubt, but that lime is most economically used, when laid upon land hot from the kiln; this mode also lessens the expense of labor considerably; consequently the practice of using it when *effete* is more expensive. It is obvious, however, that a choice of season is not always in the farmer's power; and that imposing necessity often obliges him to lay on lime when completely *effete*. Repeated trials, however, have convinced us, that its operations are equally beneficial in the one state as in the other; though the expense in the last case, as already said, is greater than in the former. With regard to the other branch of dispute, whether land in grass, or land in fallow, is the most proper bed for the reception of lime, we are of opinion, that the difference is immaterial. If grass land is clean, and if lime can be got forward at the time, the application will be as efficacious upon it, as upon the richest and best wrought summer-fallow.

That these things are not matter of opinion, we mean to show, by detailing the results of the trials made to ascertain the facts. To render these details more perfect, we shall mention the nature of the surface and subsoil upon which the several trials were made, and explain the state of the ground at the time; and, when necessary, the management practised for a series of years afterwards.

Field, No. 1, was soil, chiefly composed of thin clay, some of it approaching to a moorish quality, *i. e.* mixed with peat earth; the whole incumbent upon a subsoil retentive of moisture.

This field had been in grass for several years, but yielded very poor returns. It was fallowed without taking any corn crop; and the lime which was brought forward during the summer months, was applied in the following spring, previous to the seed-furrow being given. At that time, it was completely *effete*, and would hardly go from the shovels. About forty-five Linlithgow barley bolls, or 280 Winchester bushels, as originally laid down, were applied to each Scottish statute acre.

First year—The crop was oats, but little benefit was discovered from the lime.

Second year—The ground began to ferment, which showed that the lime was in action. The husbandry of flax being then in vogue, it was tried upon this field, and the crop was excellent, both in respect of flax and seed.

Third year—It was sown with gray pease after two furrows, which returned a great bulk of straw, but not much grain. The clay part of the field was now quite loose and free, while the moorish soil seemed more compact and firm.

Fourth year—Red wheat was sown, which turned out a bulky crop, though the season was adverse. The straw was hard, bright,

reedy, and of great length. Perhaps the greatest quantity of dung applied at once, would not have produced such a crop.

Fifth year—The field was summer-fallowed, but no dung was applied.

Here it may, with justice, be urged, that a great error was committed in withholding dung at this stage; and it is acknowledged that a dose of manure, had circumstances permitted, could not have been more beneficially bestowed. In vindication of the management practised, we may only state that at the period in question, dung was a very scarce article upon the farm; and that many fields would not crop at all, if it was withheld. The one under consideration, appeared quite capable of carrying several more crops, without assistance; consequently viewing the economy of the farm as a whole, it was thought preferable to act in the manner described. Many things are eligible in general management, which cannot be individually executed; and, as in public affairs, a partial evil must often be committed to promote the general good.

Sixth year—The field was sown with oats, and produced a heavy crop both of straw and corn. Grass seeds were sown with the oats.

Seventh year—The field was despastured with cattle. The grass was but indifferent, which is a common circumstance upon new limed land; at least where a heavy dose is given. This induced us to plough it again in the succeeding spring.

Eighth year—Oats were sown, which yielded a decent crop.

Ninth year—The field was thoroughly summer-fallowed and dunged, at the rate of sixteen double loads to the Scottish acre. Wheat was sown.

Tenth year—The crop of wheat was excellent, being not only bulky, but of fine quality.

Eleventh year.—Oats and grass seeds were sown, and the ground surrendered to pasture. Since that time, it has been a few years under corn; and though the produce of these crops cannot, by any exertion, be made to equal those which are enumerated: yet the soil is evidently much improved in every respect, when compared with its original state, previous to the lime being applied.

Field No. 2, was a real moorish soil, incumbent upon a close bottom, which had been overcropped after lime, by a former tenant.

We began with a summer-fallow, and applied a part of the same kind of lime which answered so well upon field No. 1. The lime was laid on during a hard black frost, at the rate of 35 bolls, or 210 bushels per acre, and was then *effete*. Oats were sown, but the crop was a poor one, and the after attempts were not more successful. The stalk of the plant generally *singed* and decayed, after the strength of the seed pickle was gone; which is a sure proof of ground being worn out with lime. This will always happen, though in different degrees, upon all such land, unless a considerable quantity of dung is bestowed, which unfortunately, in this instance, was not the case.

Field, No. 3.—The soil was of a moorish quality, but superior to that of No. 2.

We fallowed the field out of grass, and applied lime hot from the kiln; but the consequences were much the same as mentioned in the preceding instance. The oat-crop looked brisk at first, but decayed daily, as the strength of the pickle was exhausted. Tried dung with a second fallow, when the lime appeared to operate in a trifling degree, but not to that extent as to repay the expense incurred.

Field, No. 4.—The soil was partly thin clay, the remainder of a soft sandy nature, but all upon a wet bottom.

This field had lain, for a great many years, in grass, and displayed no signs of having been previously limed. We applied the lime upon the grass surface, when it was *effete*, and ploughed for oats: the crop good. The lime did not come into full action till the third year, when pease were sown; and, for a number of years afterwards, the different crops taken were not inferior to those of the best in the field.

Field, No. 5.—The soil was chiefly a soft loam upon a wet bottom, which at any rate had not been limed since the ridges were levelled and straightened.

We summer-fallowed this field, after a crop of wheat, and dunged it substantially, as it appeared to be in an exhausted state. We applied lime hot from the kiln, at the rate of forty bolls, or 240 bushels per acre, which operated immediately. It is now sixteen years since the application; during which time, the field has been only three years in grass, and yet its effects have not ceased.

Field, No. 6.—The soil was a strong loam incumbent upon clay, which had carried five crops of grain after being ploughed from old grass.

We summer-fallowed and dunged this field; applied lime also, which was laid on hot from the kiln, in the month of August, after six ploughings were given. The quantity applied was forty barley bolls per acre; which, in less than a month, occasioned a fermentation of the soil, something similar to what is produced by yeast upon unbaked bread. In another respect, the improvement made upon this field by lime was conspicuous. Barley could, with difficulty, be raised before lime was used; whereas, afterwards, fine crops of this grain were procured with facility. The ground was likewise much easier ploughed and harrowed than formerly, which is always a sure token of an improvement being accomplished.

Field, No. 7.—The soil was generally a thin sharp loam, a great part of it incumbent upon a close bottom. It had been three years in grass, and was sown down in good order; and, therefore, was a proper subject for receiving lime upon the sward. There was reason to believe that lime had been applied by a former tenant, but this was not certain. After harvest, we laid on from thirty-five to forty bolls per acre, not thinking the soil required a heavy dose. It was partly hot, and partly *effete*, as generally happens at that season of the year.

First year, oats were taken; the crop good. Second year, drilled beans, with intervals of twenty-seven inches; the ground being twice ploughed before sowing, and four times horse-hoed; crop middling. Third year, wheat after one ploughing, which yielded a full average crop. Fourth year, it was under summer-fallow; to which twelve double loads of dung per acre were given. Fifth year, in wheat; crop excellent. Sixth year, in drilled beans, which were managed as above. Seventh year, wheat; crop above mediocrity. Eighth year, barley, with grass seeds, after three ploughings; which, though the season was adverse (1799), turned out a decent crop. Ninth year, under grass, which was pastured with cattle, and not inferior to any in the country.

It may be objected that the above is hard cropping. This may be the case; but we are far from acknowledging that hard cropping, in certain cases, is inconsistent with good farming. The expense of lime in general is so great, that a necessity for hard cropping may be

said to be thereby created. Besides, this necessity is increased by the general shortness of leases, which impedes every permanent improvement; and, in the usage of lime, calls for the utmost exertion of the tenant, that he may be reimbursed his extraordinary outlay and trouble.

Field, No. 8.—The soil was chiefly loam, though of different varieties, and mostly incumbent upon a close bottom.

This field, which consisted of fifty acres, had been cropped for time immemorial; and, when we entered to the farm, was so tired with carrying wheat, that it was scarcely worth the ploughing. It was therefore laid down to grass with all convenient speed. In this state it remained five years, when it was broken up again; thirty acres having been limed upon the sward, at the rate of forty barley bolls per acre. Some of the lime was laid on three years before ploughing, some of it two years, and the remainder a few days before the ploughs entered. Part of it was hot, part of it *effete;* but the effects over the whole field, even in the first year, were nearly the same; if there was any difference, the ridges last limed fermented most, but the crop was equally bulky wherever the lime had been applied; though, upon the twenty acres unlimed, the inferiority was evident. From this it appears, that it was not necessary to apply lime to grass land one or two years before it was broken up, as inculcated by several writers upon husbandry; a practice, at any rate, not reconcileable with economy, as much of the lime is washed off the surface, and carried away by rain before the ground is ploughed.

Field, No. 9.—The soil was chiefly thin clay, incumbent upon a bottom of till; consequently, subject to receive injury from wetness. This field had been severely scourged by the preceding tenant; had been injudiciously straightened, which is a fatal measure to such soils; had been limed previous to the straightening; but, at our entry, was wholly under crop, and in an exhausted state.

After being summer-fallowed, in as perfect a way as circumstances permitted, this field was laid down in grass, and depastured with cattle for several years. Lime (the greatest part of which was in an *effete state*) was applied upon the sward during the winter months, and in February following, the field was ploughed for oats. The crop was middling good; but, in the six subsequent years, it did not appear that much benefit was gained from the application. In the eighth year, however, the lime acted vigorously; a small part of the field which remained unlimed being at least 50 *per cent.* inferior in crop, though the management, in every other respect, had been similar.

It is difficult to account for this cessation of action during so long a period, though it is believed that instances of the like nature are not unfrequent among secondary soils. Whether a deeper ploughing had been given in the preceding season which might bring the lime to the surface; or whether the original poverty of the soil precluded the lime from operating, till it was assisted by a copious application of dung, are circumstances not easily ascertained. In our opinion, the lime was brought into action by the dung bestowed; though it would be rash to state, as a matter of fact, what, at best, is only a probable conjecture.

Field, No. 10.—The soil was of various qualities. Part of it a thin loam, part of a sandy nature, and the remainder approaching to a thin clay; but all upon a bottom retentive of moisture. After pasturing the field for one year, we applied lime upon the sward, at the rate of

40 Linlithgow barley bolls, or 240 bushels per Scots acre. The lime was partly hot; but the greatest part of it was *effete*, which must necessarily be the case when lime is *hutted*, unless the huts are completely covered. No difference, however, was discovered in the operation, from the state in which the article was applied.

First year—The crop was oats. The season being excessively dry, little benefit was got from the lime.

Second year—We fallowed the field completely, and dressed it with dung, at the rate of fourteen double loads per Scots acre.

Third year—We sowed barley and grass seeds. The crop of barley was very good.

Fourth year—The field was despastured with cattle.

Fifth year—It was ploughed for oats. Crop excellent.

Sixth year—We drilled the field with pease and beans, after two ploughings, which were managed as already described; the crop was of great bulk, and produced fully nine bolls per acre.

Seventh year—Wheat was sown, and the crop was excellent.

Field, No. 11.—The soil was of an inferior kind of loam, upon a close bottom. The year when this field was last under summer fallow, we applied lime to a part of it, by way of trial. Dung was given likewise. We sowed barley and grass seeds. We took a crop of hay, and ploughed for oats. Every one of these crops was strikingly superior, where lime had been given; indeed, the superiority was recognizable at a considerable distance.

Field, No. 12.—The soil was chiefly a heavy deep loam; some of it a strong, tenacious red clay, but almost wholly incumbent upon a close bottom.

We ploughed this field from old grass, and sowed it with oats. It was summer-fallowed in the second year, and dressed with lime, which was mostly applied hot from the kiln; being drawn from the cart in regular sized heaps of five pecks each, or thereby, and spread the moment it was slaked by rain, or atmospherical moisture. About two-thirds of the field received fifty barley bolls, or 300 bushels per acre; the remainder from sixty to seventy bolls per acre; and the operation appeared to be in direct proportion to the quantity applied: nor was there any distinction discernible, betwixt what was applied hot, and what was completely *effete;* some of it, indeed, the season being remarkably wet, was nearly in a mortar state: the whole answered well, and operated immediately.

It was noticed, in this field, that a few ridges, on which the lime was spread in a windy day, carried crops rather inferior to those of the contiguous ones: we apprehend that the most valuable particles of the lime had been carried off, and would recommend that spreading should be discontinued when a high wind arises.

Much difference of opinion having prevailed relative to the quality of the several limestone quarries in the neighborhood, a trial was made of lime from each of them, upon six adjoining ridges of the above field. Though a difference to the eye was visible in almost every one of these samples, yet the effect upon the ground was, from all of them, precisely similar; nor could the most accurate judge say which was the greatest. The quantity applied in each case was the same, and the operations of laying on the lime, spreading it, and ploughing the ground, were all carried on in an uniform manner.

Field, No. 13.—Consisted of loam of different varieties, upon a bottom inclined to wetness, and the ridges lying in a broad and serpentine state.

We ploughed for oats, and then took drilled beans, which were succeeded by wheat. The first and last crops suffered much from the grub. We fallowed the field in the fourth year, clearing in different breadths, and cross ploughing the ridges, alternately, till the surface was completely levelled; then formed the ground into eighteen feet ridges, applied twelve double cart loads of dung, about one ton each, and fifty barley bolls of lime to the Scots acre. The lime was laid on hot from the kiln, and spread as fast as it was pulverized. This quantity was found rather too much for the softest part of the field, which, after all, is a circumstance that rarely happens; but on the remainder the fermentation was not greater than necessary; and from this part of the field, the best crops have been procured, though the ridges were both higher and broader, and required more levellings than the other.

We may now draw a few plain and practical inferences from what is stated.

1st. That lime operates equally well, whether applied in a *hot* or *effete* state, provided the condition of the ground upon which it is used be such as to render a calcareous application beneficial.

2ndly. That in respect of operation, it is immaterial whether the lime be used upon grass land or summer-fallow, and that objects of conveniency ought chiefly to weigh with the farmer in ascertaining the most proper time for applying this article. Upon old grass land, it is perhaps best to plough first, and to summer-fallow in the second year, when lime can be applied. On new and clean grass land, hesitation is superfluous; it may be limed at the outset, that is, before the plough is admittod.

3dly. That to lime, moorish soils is a hazardous business, unless dung is likewise bestowed; but to repeat the application upon such soils, especially if they have been severely cropped, is almost a certain loss, and that a compost of lime and rich earth is, in such cases. the only substitute.

4thly. That strong loams and clays require a full dose to bring them into action; such soils being capable of absorbing a great quantity of calcareous matter. Lighter soils, however, require less lime to stimulate them, and may be injured by administering a quantity that would prove moderately beneficial to those of a heavy nature.

5thly. That upon fresh land, or land in a proper state for calcareous application, lime is much superior to dung. Its effects continue for a longer period; whilst the crops produced are of a superior kind, and less susceptible of injury from the excesses of draught and moisture. Finally, the ground, particularly what is of a strong nature, is much easier wrought; and, in many instances, the saving of labor would almost tempt a judicious farmer to lime his land, were no greater benefit derived from the application, than the opportunity thereby gained of working it in a perfect manner.

It may be added, that though strong soils require to be animated with a good dose of lime, those of a light texture will do equally well with little more than half the quantity requisite on the others, especially if they are fresh, or have not already received an application of calcareous matter. In every case it is the farmer only who can judge of the quantity to be given; but, as a general principle, it is safer to

exceed the proper quantity than to be below it. In the latter case the application may prove useless, and the whole expense be lost; whereas it rarely happens that injury is sustained from an excess, especially if more or less dung is soon after administered.

Astonishing Facts relative to a former Organic World.

[FROM THE MINING JOURNAL.]

"Dr. Buckland now proceeds to the most important and popular branch of his subject—to give a description of the most interesting fossil organic remains, and to show that the extinct species of plants and animals which formerly occupied our planet, display, even in their fragments and relics, the same marks of wisdom and design which have been universally recognized in the existing species of organized beings.

"After giving some account of the supposed cases of fossil human bones, and establishing the remarkable fact of the 'total absence of any vestiges of the human species throughout the entire series of geological formations,' our author passes to the general history of fossil organic remains:—

"'It is marvellous that mankind should have gone on for so many centuries in ignorance of the fact, which is now so fully demonstrated, that no small part of the present surface of the earth is derived from the remains of animals that constituted the population of ancient seas. Many extensive plains and massive mountains, form, as it were, the great charnel-houses of preceding generations, in which the petrified exuviæ of extinct races of animals and vegetables are piled into stupendous monuments of the operations of life and death, during almost immeasurable periods of past time. "At the sight of a spectacle," says Cuvier, "so imposing, so terrible as that of the wreck of animal life, forming almost the entire soil on which we tread, it is difficult to restrain the imagination from hazarding some conjectures as to the cause by which such great effects have been produced." The deeper we descend into the strata of the earth, the higher do we ascend into the archæological history of past ages of creation. We find successive stages marked by varying forms of animal and vegetable life, and these generally differ more and more widely from existing species as we go further downwards into the receptacles of the wreck of more ancient creations. * * * * *

'Besides the more obvious remains of testacea and of larger animals, minute examination discloses, occasionally, prodigious accumulations of microscopic shells that surprise us no less by their abundance than their extreme minuteness; the mode in which they are sometimes crowded together may be estimated from the fact that Soldani collected from less than an ounce and an half of stone, found in the hills of Casciana, in Tuscany, 10,454 microscopic chambered shells. * * * Of several species of these shells, four or five hundred weigh but a single grain; of one species he calculates that a thousand individuals would scarcely weigh one grain.'

"Extraordinary as these phenomena must appear, the recent discoveries of Ehrenberg, made since the publication of Dr. Buckland's work, are still more marvellous and instructive. This eminent natu-

ralist, whose discoveries respecting the existing infusorial animals we have already noticed, has discovered fossil *animalcules*, or infusorial organic remains; and not only has he discovered their existence by the microscope, but he has found that they form extensive strata of tripoli, or poleschiefer (polishing slate,) at Franzenbad, in Bohemia; a substance supposed to have been formed from sediments of fine volcanic ashes in quiet waters. These animals belong to the genius Bacillaria, and inhabit silicious shells, the accumulation of which form the strata of polishing slate. The size of a single individual of these animalcules is about 1.288th of a line, or the 3400th part of an inch. In the polishing slate from Bilin, in which there seems no extraneous matter, and no vacuities, a cubic line contains, in round numbers, 23,000,000 of these animals, and a cubic inch 41,000,000,000 of them. The weight of a cubic inch of the tripoli which contains them is 270 grains. Hence there are 187,000,000 of these animalcules in a single grain; or the silicious coat of one of these animals is the 18,000,000th part of a grain!

"Since this strange discovery was made, Mr. Ehrenberg has detected the same fossil animals in the semiopal, which is found along with the polishing slate in the tertiary strata of Bilin, in the chalk flints, and even in the semiopal or noble opal of the porphyritic rocks. What a singular application does this fact exhibit of the remains of the ancient world! While our habitations are sometimes built of the solid aggregate of millions of microscopic shells—while, as we have seen, our apartments are heated and lighted with the wreck of mighty forests that covered the primeval valleys—the chaplet of beauty shines with the very sepulchres in which millions of animals are entombed! Thus hath death become the handmaid and the ornament of life. Would that it were also its instructer and guide!"—*Ed. Rev.*

On the Preservation of the Health of Negroes.

[FROM THE AMERICAN FARMER.]

It is a well known fact to physicians of the Southern States, that "negroes, though less liable to autumnal diseases than the whites, yet suffer *much more* severely from winter epidemics than they do." The negroes, for instance, will escape the bilious affections of the hot season, while the white inhabitants are falling victims, but, when winter takes place, the blacks are swept off, while their masters' families are secured.

There would be, in the extraordinary nature of the fact, a sufficient incentive to the investigation of the cause or causes of this difference: but there are motives of a still more urgent nature, that demand an attempt at discovering the cause and preventing the effects. The blacks constitute, either absolutely or instrumentally, the wealth of our Southern States. If a planter, as it often happens, is deprived by sickness of the labor of one third, or one half of his negroes, it becomes a loss of no small magnitude. If we should then succeed in ascertaining the cause, and pointing out a preventive, we shall not only have gratified curiosity, and served the interests of the planter, but also feel the approbation of our own mind in having aided the cause of humanity.

We have seen in our last number, "On Heat and Clothing," that *white* and *polished* surfaces let off heat *slowly;* whereas *black* or *rough* surfaces radiate it *freely*. This is admitted as a fact in chemistry and physiology. We know that liquids cool soonest in *dark* vessels, and retain their heat longest in *bright* ones. We also know that animals in polar regions, which are of a *dark* color in the summer, change to *white* in the winter; nature, no doubt, intending by the change of color as much as by the thickening of their coat, to secure them against the severity of the cold. The negro on the other hand, was designed for the sultry regions of the torrid zone. His surface is therefore adapted to the ready escapement of internal heat. Hence, when transplanted to colder latitudes, he and his posterity are less capable of resisting external cold, because they are less capable of retaining their internal heat. It is also a fact well known to physiologists, that the body of a negro is, *cæteris paribus*, several degrees cooler than that of a white person. We know too, that blacks uniformly show themselves fonder of the fire than whites.

That they are then *really* more chilly, we cannot doubt, after taking into view all the circumstances just noticed. It therefore necessarily follows, that they are more liable to diseases brought on by the cold of winter, than white persons. They are likewise more subject to disease on account of their great exposure to wet and inclement weather.

In the enumeration of the causes of the greater liability of negroes to winter epidemics, we perceive an immediate answer to the question, "how can the health of slaves be best preserved?" We see that if they had a *white* skin, it would prove a security to them: but as we cannot "wash the Ethiop white," we must use such other means as may prevent the free escapement of their heat. They ought, in the first place, to wear *woollens* next their skin, instead of linen and cotton. Long woollen shirts would retain their heat, equalize the excitement, and secure them against the effects of wet work and rainy weather. These shirts should be *white*, for reasons too obvious to need repetition. They should also be frequently washed, as clothing loses very much of its capacity for retaining heat, when filled with perspiration, &c. The truth of this we experience every time we change our soiled clothes for clean ones; for an increased and permanent glow of heat is the consequence of putting on clean clothes. When wet, negroes should dry by a good fire. They should also be allowed to sleep by a fire, if convenient; the *out* laborers especially.

By attending to this regimen, we feel no hesitation in saying that a planter will greatly secure the health of his slaves; and we shall conclude with remarking, that it now lies with him to determine, as soon as he may see proper, whether the trouble and expense of this preventive is rather to be chosen than the risk of losing much by the sickness or death of his negroes.

FRANKLIN.

Inoculation or Budding.

[FROM THE GENESEE FARMER.]

The propagation of fruit may be effected by planting the seeds, by grafting, and by budding. The uncertainty whether the fruit from the trees grown will be like those of the parent prevents much reli-

ance for choice fruit on the first method, and seeds are usually only sown to furnish stocks upon which to engraft or bud. On several accounts grafting is generally preferred to budding; but instances frequently occur in which it is desirable to propagate choice fruit where grafting cannot be practised. Thus in the summer season grafting is impracticable; but then budding comes to our aid, and enables us to secure the advantages of grafting with little comparative risk. A bud may be considered an embryo plant, of the same species as the parent tree, possessing distinctly developed parts, and individual vitality, and of course when removed to a congenial place, capable of continued growth, and a re-production of its species. In this transferrence of the bud from one place of growth to another, it is necessary that the plant into which the transfer is made, should be of the same genus of plants, and even the same species will usually be found most congenial. All the varieties of the apple and pear may be budded together; and the apricot, nectarine and peach may be treated in the same manner. The plum and the peach are sometimes budded on each other; but the cherries are usually confined to stocks of the same kind of tree.

The time of budding is partly depending on the tree itself and partly on the vigor of its circulation. July and August are the usual months for budding, but the cherry frequently succeeds in June, and the nectarine, &c. as late as September. The greater part of the failures that occur in budding arise from its being attempted at an improper time, when the bark does not separate freely, or when the new wood for the year is so far formed that new unions are not readily made. A sure indication of the tree being in a suitable state for budding is the bark peeling freely; this showing that the cambium or new wood is at that stage of formation which best secures the union and consequent life of the bud. To ensure success it is requisite that the bud should be mature; that the bark of the stock separate freely; and that the operation be performed in such a manner, that the introduced bud come in perfect contact with the stock.

The common practice in budding is to separate the bud in such a way that the longer portion is below the bud; consequently in making the incision in the bark, the bud is crowded downwards from the cross slit of the stock. As it is well known, however, that the elaborated juices that form the cambium or new wood, proceed from the leaves downwards, it was suggested that the cross cut made in the bark at the *upper* end of the perpendicular incision must have a tendency to cut off the downward flow of sap, and thus retard if not entirely prevent in many cases the desired union of the bud and stock. To remedy this it has been proposed by some French and English fruit growers to make the cross cut at the *lower* end of the incision, and then having the bark to which the bud is attached, longest *above* the bud, crowd it in the incision upwards, instead of downwards, as in the usual mode. This by some is considered a decided improvement, but though its philosophy may be plausible, its superiority in effect to the former mode, can only be tested by experience.

Every farmer should set apart a few rods of ground for nursery purposes, in which a supply of young trees, such as apples, peaches, plums, cherries, &c. may be kept, and these, when of a suitable age, say two or three years, should be grafted or inoculated with the choicest varieties, and then they can be transplanted or otherwise disposed of at pleasure. Many kinds of fruit trees are so short lived, particu-

larly in our climate, that unless some efforts are made to ensure a supply, and renew them as they fail by age or other causes, we must for the greater part of the time be destitute of some of the most desirable fruits. We may mention for the convenience of those who in moving or travelling from one part of the country to another, would be glad to secure a supply of buds of some favorite fruit for propagation; that if the twigs on which good buds are found are cut, (and the longer the better) and immediately deprived of their leaves by cutting the leaf stem with a pair of scissors or a sharp knife, and then wrapped in wet moss or even wet cloths, they may be preserved for many days in a fresh and healthy state, so as scarcely to fail of growing where skilfully inserted.

Charcoal as a Cathartic, in cases of obstinate Costiveness.

[From the London Medical Repository.]

Dr. Daniell has published some cases illustrative of the effects of charcoal in cases of obstinate constipation. In the first case which occurred to him, after having employed the usual treatment of bleeding, warm bath, and mercurial purges, aided by jalap, castor oil, with other active medicines of this kind, without success, he conceived that a favorable opportunity had occurred for trying the efficacy of charcoal.

"I gave," he has informed us, "a table spoonful of it every half hour, and at the expiration of about seventeen hours, my patient's bowels were freely evacuated. The dischargee, which consisted chiefly of a thick mocus, were colored by the charcoal. The medicine was then discontinued, and castor oil substituted; the latter however evacuating but partially. I had recourse again to the charcoal, which was continued until the patient recovered. My observations since have convinced me of the necessity of continuing the charcoal until the discharges are no longer marked by the presence of slime or mucus, which I have found to abound in very considerable quantities, in all the cases of constipation which have fallen under my care—And I think the existence of this matter in the intestines, may explain the cause of failure, not only of powerful enemata, but of cathartics, to evacuate them. Lining as it most probably does. the chief or whole of the bowels, it protects their surface from the influence of the medicines.

"The charcoal probably exercises a chemical influence upon this matter. The evacuations produced by the charcoal appear to be composed chiefly of this article, and the mucus or slime intimately blended.

"Since this case, I have used the charcoal in fourteen or fifteen other instances, and always with complete success. In this disease the sufferings of the patient are usually extremely great, and I have occasionally, since adopting the charcoal, attempted to relieve them by other cathartics which operate more speedily, but I have invariably failed, and was afterwards compelled to have recourse to that remedy; sometimes, however, not until the third and fourth days of this disease, and always with decided advantage. Further experience has convinced me, that the most speedy, as well as most certain relief is to be obtained from the free use of charcoal. If it does not wholly relieve, it always very much mitigates the pain in six or eight hours

from the period of its first administration; and within my observation the patient has always been entirely composed before the operation of the medicine upon the bowels.

"To many, the tardy operation of this medicine may appear as a serious objection to its use. It was formerly so to me, but since I have been convinced of its certain efficacy, and that although it may not act upon the bowels in twenty-four hours, even after its first exhibition, yet that it will in one third of the time, very much relieve if not wholly remove the pains, &c. This objection appears comparatively unimportant; for what avail a few hours in the cure of a disease, if we can control the sufferings of our patient, and afterwards certainly relieve him.

"In regard to the dose of this medicine, the rule which I have pursued is to give it as freely and as frequently as the stomach will allow. The quantity required is considerable. It has a happy influence in lulling the irritability of the stomach, when nothing else which I have used, would control the nausea and vomiting of the patient; thus fulfilling the double intention of alleviating a very distressing symptom, and then removing the disease itself. I usually give from one to three table spoonfuls of the charcoal every half hour or hour; whenever the stomach becomes overcharged with the medicine, the excess is thrown off, and the stomach is again quiet. I give in lime water, milk, or water alone, the vehicle having appeared to me unimportant."

Nutritive Qualities of Charcoal.

[FROM THE GENESEE FARMER.]

Though the importance of mixing charcoal with the food of animals, particularly that of swine, has been generally acknowledged, and its benefits extensively tested, still it has been supposed that it only acted as a corrective to the acid tendency of food, and facilitated fattening, by improving the health of the animal. Some experiments, are, however, on record, which would seem to show that charcoal acts a more important part in the matter, than has usually been assigned to it.

In 1793, a family being driven from New-York by the fever, were absent six or eight weeks before it was deemed prudent to return. A number of fowls confined in a loft in the workshop of the house were forgotten at the time of leaving, and as it was known there was nothing provided for their subsistence, it was expected on the return they would be found starved to death. To the astonishment of all, the fowls were found alive and fat, though there was nothing upon which they could have fed, except a quantity of charcoal and shavings; water being supplied from the grindstone trough.

These facts coming to the knowledge of a gentleman in New-York, as we learn from the Recorder, he instituted the following experiment. He placed a turkey in a box or enclosure four feet long, two wide, and three or four feet high, excluded light as much as could be done, and allowed a free circulation of air, and fed the turkey with soft brick, broken fine, pounded charcoal, and *six* grains of corn per day. The box was kept locked. At the end of a month, the turkey was killed in the presence of several gentlemen, was large and heavy, and on being opened was found filled with fat. Nothing, on dissection, was found in the gizzard and entrails but charcoal and brick. Last winter the experiment was repeated, and with the same success.

Several years since, in fitting out one of the Liverpool traders at New-York, a pig on board was missing and was supposed to have been lost. The cargo was taken on board, stowed, and the vessel sailed. It was now discovered that the pig was alive in the coal hole, but as he could not be got at readily, it was concluded to leave him to his fate. He remained in this retreat until the passage was made, when his pigship was found to be not only alive and well, but materially improved in condition, though there was nothing, coal excepted, he could have swallowed.

When it is remembered that wood, sugar, and several other substances, some of which are most nutritive, are compounded of nearly the same original elements, it would seem possible, by animal chemistry, to convert them to the purpose of sustaining life; though all experiments with wood or charcoal have failed. The German chemists have converted wood into very palatable bread, by roasting and pulverizing; but calcination, it has been supposed, would destroy whatever powers of nutrition wood might originally contain. The chemical action of vegetables seems unable to produce the least effect on coal, and not the least particle of it has ever been found in the structure of vegetables, though mixed with the earth and water in which plants were growing, in the form of the most impalpable powder. Whether animal chemistry is able to do what vegetable organization cannot, remains to be seen; though if there is no mistake in the statements alluded to, it would seem probable that this intractable substance is, in some way, made subservient to the nutrition of animals.

Squash Vines.

[FROM THE GENESEE FARMER.]

Mr. Tucker,—I have heard people express their surprise that a single root of the pumpkin or the squash, should be able to furnish the sap and nutritive matter for such a mass of vines, leaves, and fruit as are sometimes produced from a single seed. It would be indeed surprising if one root actually did furnish all the nutriment required for such an amount of growing materials; but one root does not perform all this labor, (at least in squashes) as any one may satisfy himself by examining a thrifty vine, after it has run a few feet. Last year I made me a bed for cucumbers, &c., by placing several loads of horse manure in the garden—on this I placed a box made of boards eighteen inches wide, and filled it in with earth on the top of the manure. On the outside of the box, I planted a few of the acorn squash seeds, so that they might feel the effects of the manure, yet not interfere with the cucumbers. The cucumbers did well, and I had two squash plants. One of these produced more than 200 feet of vine, and bore thirteen large squashes, that ripened well. In examining this vine, the manner in which the plant receives support in addition to that furnished by the original root could be clearly seen. At every two or three feet, side shoots were thrown out from the main vines, and at every such point tendrils projected by which the vine clung to whatever was within its reach. These runners, and these tendrils were thrown out at the sides of the main vine; but on the under side a delicate white fibre projected downwards, which penetrating the earth rapidly increased in size, and in a few weeks became

a root large enough to aid materially in furnishing support to the plant and the growing fruit. It can scarcely be doubted, that these new roots would have nourished the plant, and brought its fruit to maturity had the main vine been separated at the root. This formation of new roots as they are needed, is another proof of the wise ordering of nature, and the application of means to effect the end designed. M. D.

Origin of Silk Worms.

[From the Journal of the American Silk Society.]

How little was known about silk worms in England and France one hundred years ago will appear from the following: I have before me a book entitled 'A complete history of Drugs, written in French, by Monsieur Pomet, chief druggist to the late French King Louis XIV., to which is added, what is further observable on the same subject from Messrs. Lemert and Tournefort,' &c. 2d edition, London, 1725."

This book gives the following as the origin of silk worms:—

'The silk worms are little insects whose origin is altogether surprising, as well as the various shapes and changes they undergo. Several authors have writ of them; and amongst the rest Mr. Isnard, in a little treatise of his, at the 254th page, accounts for their original, thus: 'At the time when the mulberry leaves are ready to gather, which should be five days after their budding, in the beginning of the spring, they take a cow which is almost at calving, and feed her wholly with mulberry leaves, without giving her any thing else to eat, of herbs, hay, or the like, till she has calved; and this they continue for eight days longer; after which they let the cow and calf both feed upon this some days together, without any other mixture, as before. They kill the calf after it has been filled, or satiated with the mulberry leaves and the cow's milk; then chop it to pieces to the very feet, and without throwing any thing away, put all together, the flesh, blood, bones, skin, and guts, into a wooden trough, and set it a top of the house in a granary, or garret, till it is corrupted; and from this will proceed little silk worms, which they lay together on a heap, with mulberry leaves to raise 'em afterwards, just as they do those which are produced from the eggs; and these silk worms are abundantly more fruitful than those from the eggs; so that those who deal considerably in them, never fail every ten or twelve years to raise them this way.'

This learned and philosophical history of the origin of this insect, was gravely published in London in 1725. That the book in which it was published was no trifling or obscure affair, will appear from the fact, that it is 'illustrated with about *four hundred copper cuts*,' and among them is an excellent copper plate, representing the above method of producing silk-worms, viz: the cow feeding on mulberry leaves, the calf chopped to pieces and disposed in the wooden trough, with numerous little worms crawling out of it; the feeding of silk worms in their various ages, the latter spinning cocoons, the conpling of the moths, production of eggs, the silk reel, reeling silk from the cocoons, &c. But the object of bringing this curious piece of natural history before the reader, is to show the real state of knowledge of the silk worm in England and France only one hundred and fourteen

years ago. It is true the learned translator of the book, says, in reference to the above process of producing silk-worms, that 'this thought wants confirmation.' However ridiculous the above may appear, it does not comprise a tithe of the absurd notions entertained by the French and Italians of those times on the subject of silk-worms; and, what is still more strange, many of them are still retained and gravely enforced in their books. G. B. S.

[FROM THE AMERICAN FARMER.]

Dear Sir,—This circular has been addressed to the Diplomatic Corps and the officers of the Navy, and I cannot but contemplate beneficial results.

Your's, respectfully,

H. L. ELLSWORTH.

APPENDED TO THE CIRCULAR ARE THE FOLLOWING

Directions for putting up and Transplanting Seeds.

With a view to the transmission of seeds from distant countries, the first object of care is to obtain seeds that are fully ripe, and in a sound and healthy state. To this the strictest attention should be paid; otherwise, all the care and trouble that may be bestowed on them will have been wasted on objects utterly useless.

Those seeds that are not dry when gathered, should be rendered so by exposure to the air, in the shade.

When dry, the seeds should be put into paper bags. Common brown paper has been found to answer well for making such bags. But as the mode of manufacturing that paper varies in different countries, the precaution should be used of putting a portion of the seeds in other kinds of paper. Those that most effectually exclude air and moisture are believed to be the best for that purpose. It would be proper, also, to enclose some of the seeds in paper or cloth that has been steeped in melted beeswax. It has been recommended that seeds collected in a moist country, or season, be packed in charcoal.

After being put up according to any of these modes, the seeds should be enclosed in a box, which should be covered with pitch, to prevent them from damp, insects, and mice. During the voyage, they should be kept in a cool, airy, and dry situation; not in the hold of the ship.

The oily seeds soonest lose their germinating faculty. They should be put in a box with sandy earth, in the following manner: first, about two inches of earth at the bottom; into this the seeds should be placed at distances proportionate to their size; on these another layer of earth about an inch thick; and then another layer of seeds: and so on, with alternate layers of earth and seeds until the box is filled within about a foot of the top, which space should be filled with sand; taking care that the earth and sand be well put in, that the seeds may not get out of place. The box should then be covered with a close net-work of cord, well pitched, or with split-hoops or laths well pitched, so as to admit the air without exposing the contents of the box to be disturbed by mice or accident. The seeds thus put up will germinate during their passage, and will be in a state to be planted immediately on their arrival.

Although some seeds with a hard shell, such as nuts, peaches, plums, &c., do not come up until a long time after they are sown, it would be proper, when the kernel is oily, to follow the method just pointed out, that they may not turn rancid on the passage. This precaution is also useful for the family of laurels, (laurineæ) and that of myrtles, (myrti,) especially when they have to cross the equatorial seas.

To guard against the casualties to which seeds in a germinating state may be exposed during a long voyage, and as another means of ensuring the success of seeds of the kinds here recommended to be put into boxes with earth, it would be well, also, to enclose some of them (each seed separately) in a coat of beeswax, and afterwards pack them in a box covered with pitch.

It may not be necessary, in every case, to observe all the precautions here recommended in regard to the putting up and transmission of seeds; but it is believed that there will be the risk in departing from them, in proportion to the distance af the country from which the seeds are to be brought, and to the difference of its latitude, or of the latitudes through which they will pass on the voyage. It is not intended, however, by these instructions, to exclude the adoption of *any other modes of putting up and transmitting seeds and plants, which are in use in any particular place, and which have been found successful*, especially if more simple. And it is recommended, that not only the aid of competent persons be accepted in procuring and putting up the seeds and plants, but that they be invited to offer any suggestions in regard to the treatment of the plants during the voyage, and their cultivation and use afterwards.

Varieties of the Mulberry.

[FROM THE WESTERN FARMER.]

There exists at present a great diversity of opinion as to the relative qualities of each of the different kinds of mulberry for producing silk. The kind specifically known as *multicaulis* has been also known under the synonism of *China*. The red mulberry of America has also been blended with the black of Europe. We sometimes see the names of *Dandola*, *Italian*, *Brussa*, and *Constantinopolitan;* rough dwarf and Pennsylvania. The first four of these are probably the same; the latter perhaps only varieties of the red. Beck nor Eaton mentions any other American but the red. We subjoin a list of such as have been discovered.

Botanic name.	*Common do.*	*Native of*
1. Morus Nigra,	Black,	Asia Minor.
2. do. Rubra,	Red,	N. America.
3. do. Alba,	White,	China.
4. do. Moretti,	Dandola,	Italy.
5. do. Multicaulis,	Many Stalked,	China.

Loudon says nothing of number four,—gives Italy as the native country of the Black, and adds:

Morus Tartarica,	Tartarian,	Tartary.
Do. Tinctoria,	Fustic wood,	W. Indies.

Sweet makes the following addition to the list:

Morus, Italica,	Italian,	Italy.
Do. Constantinopolitana,	Constantinople,	Constantinople.
Do. Scraba,	Rough,	N. America.
Do. Pennsylvania,	Pennsylvania,	do.
Do. Pumula,	Dwarf,	do.
Do. Indica,	Indian,	East-Indies.
Do. Senensis,	Chinese,	China.
Do. Mauritiana,	Mauretius,	Mauretius.

The two last are green house plants, and too tender for a Northern climate.

The Mulberry Crop and Prices.

[FROM THE WHIP.]

The planting of morus multicaulis trees this year in Virginia, and generally in the United States, has become so large and costly a business, that it forms an important item of agricultural labor, investment and product; and on that score alone, deserves notice, whatever may be the opinion as to the propriety, and ultimate profit of this direction of so much energy and so much capital.

Though there has been no lack of opinions, predictions, promises, and rumors, of prices of morus multicaulis plants of the growing crop, all seemed uncertain, and little worthy of trust, until very recently. Therefore, we have remained silent on this point, until we had facts, and such as were unquestionable, to report, instead of mere opinions, or rumors of prices and prospects.

There now can be no doubt of a general short crop of the morus multicaulis. Besides the many concurrent newspaper statements, which have been open to the public, we have had private letters and other information giving reports from Pennsylvania to Florida inclusive. All such reports are of very short crops—the numbers of plants standing in each particular lot, stated as varying from one-half to one tenth of the cuttings planted; and fewer persons exceeding the former proportion. than there are who fall short of the latter. Of our own planting there is standing but three-eighths of the mature and well preserved cuttings planted. We have heard of but one place where the stand is reported to be all satisfactory; this is the vicinity of Burlington, New Jersey; and of this, our information is by no means full or precise.

The causes of the general and great failure of the cuttings to grow, (where sound and fresh, and properly preserved,) were the following:

1st. In many cases, improper management in planting—in which some of the most experienced cultivators have suffered greatly; and almost every planter now knows some one or more great errors which he committed, and the avoiding of which would have prevented half his present loss.

2nd. The long and severe spring drought.

3d. And still more, the planting of single-bud cuttings, which was done almost universally in the South, even when of the smallest size. As to cuttings of unripe extremities, which the raisers have planted extensively, there has been so total a failure, as to show that they are not to be relied on at any time.

We know nothing of the crop north of Pennsslvania, and it is almost too soon for it to be yet above ground. But there, every year

will show a failure, or at least what would be considered a great failure here.

Mr. Prince, notwithstanding his undoubted great advantages, at his own nursery and garden on Long Island, *has made a large planting in Virginia.* This is a most striking evidence of the vast superiority of our climate for this culture, and a not less complete admission of Mr. Prince's not confiding in his own former assertions and claims, in this publication, in favor of the northern growth.

His argument, then maintained, if it needed any refutation, is now completely refuted by himself.

The whole crop of the United States, we infer, cannot much exceed half of the proportion expected to grow from the cuttings planted. Of course, whatever might have been the demand for a full crop, must be greatly increased.

Not many sales of trees of the growing crop have yet been made in Virginia. In the early part of the year, a contract, as large as the buyer choose to make, was made to deliver trees, in Greensville county, next autumn, at six and a-quarter cents. Some other, and large contracts were made at twelve and a-half—add of these, one in Nottoway between two intelligent and wealthy landholders, was as late as two or three weeks ago. Still later, an entire lot of 20,000 trees were sold in this town for fifteen cents each, not to include any under three feet high. In Richmond the following sales of growing trees have been made within the last week. Thomas J. White, Esq., sold all the trees of his crop (10,000 cuttings planted,) which may reach or exceed three feet in height, at twenty-five cents. Messrs. Hill & Dabney sold 3000 trees, all to be as high as four feet at twenty-seven cents. Messrs. L. and R. Hill bought a lot to include all of four feet and more, at twenty-seven and a-half cents. No holders there will now take offers of less than twenty-five cents the tree.

On the 24th of June, a small lot of the roots and young shoots of fifty trees (being all on the piece of ground, now in the fourth year from the planting of the buds,) raised by S. D. Morton, Esq. of Petersburg, were sold by him for $5 each. The tops had been cut off at the ground last fall, and sold them at $10 each. As this is the only instance yet known of two successive years' sales from precisely the same stock and land, we had the curiosity to have the ground accurately measured. The trees occupy *(partly,* for the ground has also two rows of corn to each row of trees,) a space of twenty by sixty feet, including three feet of additional space beyond each outside row. This is at the rate of 1,815 trees to the acre; and at $15 each, the amount of cash sales for the two successive years' growth, from the same roots, is at the rate of $27,225 per acre. This is pretty well for a "humbug," (as some still call it,) of two years duration.

We might state *reports,* and apparently on good authority, of sundry higher prices, offered and refused, or taken; but we have disregarded all rumors of prices, and all offers not accepted—as most of such reports are founded upon error, and *not a few upon fraudulent intention.* Judging however from the real transactions stated, it would seem that the price has been certainly and steadily advancing to this time, and that good profits at any rate may be secured by every planter, whose loss of plants does not exceed 80 in the 100. As to whether the prices have reached, or nearly reached their greatest height—or whether they will (as most persons suppose,) rise much

higher before the crop is ready to be delivered—we shall not persume to offer an opinion.

Since writing the above, a private letter from an extensive planter and dealer, in Burlington, New-Jersey, has been shown to us by the friend to whom it was addressed, and at our request, permission was given to copy the following extract, which more than confirms what we have stated. The writer is a man who stands on the highest ground for sound discretion and judgment, and unimpeachable integrity. His facts are important. To his mere opinion, the reader may attach what degree of importance it may seem to deserve.

"Burlington, N. J., 6 mo. 24th, 1839.

"There are very great failures in this region of country, but at this place they are doing better than in most others. My trees (from which the planting was made, were not very large, it is true, but they were in very good condition; and yet they will not give me a return of more than 6 to 1. Some others have as much as 8 for 1, and one of my friends here has more than 12 for 1. But, from Pennsylvania. I have a letter from Hartford, from a gentleman from this State, in which he says the trees in Connecticut have come up badly. I have purchased about 60,000, to be delivered in the fall, the first 50,000 at 15 cents for three-feet trees, mature wood, exclusive of the roots, all raised from cuttings. These were purchased about two weeks ago; they would now bring 25 cents. The last purchase was 10,000 in this place, which I expect will be very fine, at 25 cents per tree, without reference to sizes. Several sales have been made here at 25 cents, and one of 6000, at 30 cents. The last is, I think, the highest price yet obtained. But I believe they will be 50 cents before next month expires."

Analogy between Medical and Agricultural Education.

[FROM THE NEW-YORK CULTIVATOR]

The physician and surgeon, to qualify them for their profession of preserving life, are required to study the anatomy of the human frame, the functions of every part of the system, and the nature and quality of whatever is requisite to administer to its wants, or to remove the ills that flesh is heir to. Without this knowledge he can but *guess* at the cause or seat of the disease, and of course his prescription must be questionable and often a knowledge of these matters cannot be acquired by bare practice. It must be obtained from the teaching of ages—in schools of medical science—in the dissecting room. Hence the laws of every civilized people require in the pupil this preliminary study before he is permitted to practice the art professionally. And no intelligent man, who justly appreciates the necessity of the science to perfect the art, likes to trust his health and his life in the hands of a pretender, who knows nothing of the great principles of the business which he professes to practice.

So with husbandry. It embraces principles of science, upon which good modes of practice must necessarily be based: and without a knowledge of these principles, the labors of the farmer, like the prescriptions of the quack, must be either *guess work* or confined to the

routine in which he has been instructed. His soil and his animals are liable to sterility which he is ill qualified to cure. Unless he knows something of the compositions of the one, the anatomy of the other, as branches of natural science, he is not likely to discover the true cause of an evil, nor to apply to it the right remedy. We will give to it a single illustration of farm crops. It is now universally admitted, that the alternation of crops is highly conducive to good husbandry. But why is it so? Science, which expounds the laws of the Creator, in regard to inanimate matter, not only furnishes a satisfactory answer to the question, but suggest the classes of farm crops, and the order of succession, that ought to alternate and follow each other. Again,—gypsum, lime, marl, and ashes, are beneficially applied to some soils, to some crops; and in some seasons, while they are not beneficial upon other soils, to other crops, and in other seasons. Science can only explain these seeming contradictions. In schools of scientific and practical agriculture, in which a series of experiments should be continually going on, these problems would ere long be solved; rules of practice would be laid down; the results and the natural causes of these results would be explained and the community, and every member thereof, who had a latent spark of improvement, or the ambition to improve his condition, would seek for practice and profit, from the discovery. In this, agriculture differs from most other professions, the benefits of improvements may be monopolized by an individual, or a small number; improvements in husbandry are accessible to all, who are not too conceited to learn, or too indolent to practice, from the examples of improvement which are every day making around them.

The results of the analogy which we have drawn, between medical and agricultural knowledge is this,—that science is equally beneficial to both; that while the one is destined to preserve and prolong life, the other is charged with nourishing it, and of multiplying its comforts and enjoyments; and that both are consequently entitled to the protecting care of an enlightened community.

On Breeding from Young Stallions.

[From a letter to the Editor of Bell's Life in London.]

Sir,—It is to me matter of surprise that breeders of horses for the turf should persist in putting the best horses to the stud whilst they are so young as only four years of age, as is very often the case with the winners of the Doncaster St. Leger, and the Epsom Derby Stakes. They are often sold, soon after winning those stakes, for a very high price, and in many instances are put to covering mares the very next season; and I will beg to ask any of your readers conversant with turf matters, how many of these Leger and Derby winners produce Leger and Derby winners? I think they will not be able to show many instances of it: yet from those races combining a longer distance, a heavier weight to carry, and a faster pace throughout than most other races for three year olds, the winners of them must of necessity be innately strengthy and sound, and have every right to be considered the best horses of the day at their age. What makes it more surprising that they should continue to breed from such horses so young, is the broad fact before their eyes, that most of these win-

ners are produced from old horses and old mares. This fact is worthy of their serious attention: for the same result is found in breeding greyhounds, and a perusal of Mr. Thacker's work on coursing and breeding will explain to them the cause of the result; and that the too prevailing idea of the utility of breeding from animals in their season of youth and vigor is very fallacious. There is a time for all things; so with breeding animals for labor; there is a time to breed, a time to grow to maturity, and a time to labor. The province of nature, I conceive, during growth to be, to give perfection to the animal; labor in moderation during the latter part of the growth is essential towards that perfection; but it seems, by the best animals being produced from old parents, that the province of nature is still to labor for a time, in order to give the fullest and most perfect development to all the parts, to be settled and seasoned so that the power to labor is constitutional in them; then comes the province of nature for breeding and reproducing animals in the greatest perfection. If, on the other hand, you put them to breed before they are arrived at perfection, you impose a double tax on nature to the prejudice of all the three provinces of it: to the prejudice of the growth, the labor, and the reproduction. To breed the best horses it is undoubtedly the best way to breed *from* the best; but those best should be in the best state to breed from, which cannot be the case before they are themselves arrived at perfection.

A paragraph in your paper, July 3, 1836, respecting Filho, Walton, Whalebone, Woeful, Partizan, and nearly all the eminent stallions, getting better runners in their old or declining years than when in the season of youth, freshness, and vigor, drew my attention to this subject, and I am further convinced of the necessity for mature age to breed from by the perusal of the work before mentioned. In the hope that these few lines may contribute towards preventing Bloomsbury, and other first-rate horses from having the *bloom* taken from their goodness by prematurely putting them to the stud, is the object of addressing you, and the wish of, sir,

Your most obedient, A. B.

Vaccination.

The following Report of a Committee on this subject was presented at the late Annual Convention of the Connecticut Medical Society.

The Committee to whom was referred the subject of Vaccination, beg leave to

Report, That this important subject, at all times deserving of the attention of medical men, has of late years been rendered peculiarly so by the increase of variolous and varioloid diseases.

It is now about fifty years since the vaccine virus was introduced to public notice by Dr. Jenner. He obtained it from a cow in the place where he resided. From this origin—from this one cow—more than fifty years ago—was derived the virus since carried over the world, and used in all countries. In 1800 some of it was brought into this country by Dr. Waterhouse, of Cambridge, Mass., and from thence has been distributed over the United States. Your Committee, are, however, aware, that some genuine virus was obtained in this country directly from cows, about the time that it was brought hither

from England. Some was thus obtained in 1801, by Dr. Wm. Buel, of Sheffield, Mass., and by Dr. North, of Goshen, and Dr. Trowbridge, of Danbury, in this State. Since that time we believe it has very rarely been obtained from cows in this or in other countries.

Fears have of late season among physicians in Europe, and to some extent in this country, that this virus so long circulating in the human system, has lost some of its preventive power; and many believe from their own observation, that it is less active than formerly.

Efforts have been made in England to obtain virus again from its original source; but it is a singular fact, that though cows were often affected with this disease about the time of Jenner's discovery, not only in England, but in this and other countries, yet for many years since then, and even until within a few years, it has but seldom been witnessed in this animal.

This has given rise to the opinion entertained by some, that the vaccine disease is really but a form of small pox, mitigated by passing through the system of another animal;—an opinion deserving of consideration and investigation.

Within the last year Mr. Estlin, a distinguished surgeon of Bristol, England, obtained some virus direct from the cow. This has been used extensively in England, and deemed by those who have tried it, to be more active than that formerly in use, producing larger and more distinct pock and areola, and more marked constitutional symptoms. Mr. Estlin has had the kindness to transmit portions of this recent virus to several physicians in this country. One of your Committee received from him a small quantity in October last, which was but the tenth remove from the cow. This has been used by the physicians of Hartford, and been found to produce the peculiar symptoms of the vaccine more distinctly than that used by them for several years past.

Your Committee are desirous of awakening the attention of the members of this Society to the whole subject of small pox, and its varieties and methods of cure and prevention. So far as they can learn, there is not the least ground to doubt that the genuine vaccine virus is completely preventive of the small pox; but they are fearful that much virus has been used that is not genuine, and they are not without much apprehension that the preventive powers of the vaccine virus from variolous disease, may be but temporary, lasting but ten or fifteen years. This apprehension is strengthened by the increase of small pox of late, and by investigations recently instituted in Europe upon the subject.

Your Committee, therefore, take the liberty of offering the following suggestions:

1. That every physician who attends at the birth of a child, should see that the child is vaccinated during its first year. This will serve to keep most parts of the State constantly supplied with virus.

2. That the most careful examination be made to ascertain from the appearance of the pock and areola, and the symptoms manifested, that the virus is genuine, and in all cases of doubt to re-vaccinate.

3. That physicians recommend re-vaccination once in ten or twelve years.

4. That they embrace every opportunity of obtaining the virus directly from the cow, and test its genuineness, and endeavor to ascertain from whence the disease in the cow originated.

Power of the Horse.

[FROM THE WHIP.]

A horse at a dead pull, or at the beginning of his pull, is enabled by the force of his muscles, to throw a certain weight into the collar. If he walks four miles in the hour, some part of that muscular energy must be expended in the act of walking; and, consequently, the power of drawing must be proportionally diminished. If he trot eight miles in the hour, more animal power is expended in the trot, and less remains for the draught; but the draught continues the same, and to enable him to accomplish his work, he must tax his powers proportionably.

The load which a horse can draw is about fifteen times greater than the power exerted, supposing the road be hard and level, and the carriage to run with little friction, and the horse, which, at starting, can throw into the collar a force equal to 216 pounds, will draw a load of 3,200. Let him, however, be urged on at the rate of ten miles in the hour—deduct the power used in swiftness of pace from the sum total of that which he possesses, and what remains? not a sixth part—not that which is equal to a quarter of a ton.

It is said that between Glasgow and Edinburgh, a carrier in a single horse cart, weighing about 700 weight, will take a load of a ton, and at the rate of twenty-two miles in a day. The Normandy carriers travel with a train of four, and from fourteen to twenty-two miles in a day, with a load of ninety hundred weight.

An unparalleled instance of the power of a horse when assisted by art, was shown at Croydon, near London. The rail-way being completed, a wager was laid that a horse could draw thirty-six tons for six miles along the road, and that he should draw his weight from a dead pull, as well as turn it round the occasional windings of the road. Twelve wagons, loaded with stores, each wagon weighing about three tons, were chained together, and a horse taken promiscuously from a timber team, was yoked to the train. He drew the chain of wagons with ease a distance of six miles in an hour and forty-one minutes. In the course of the journey he stopped four times, to show that it was not by any advantage of descent that this power was acquired; and after each stoppage he drew off the train of wagons with great ease. Four more loaded wagons were added, with which the same horse set off again with undiminished pace. Still further, fifty men mounted the wagons, and the horse proceeded without the least distress. After this trial it proved by the weighing machine that fifty-six tons, six cwt. and two quarters were the weight moved by this horse along the rail-road.

Spanish Oxen—Working Cows.

[FROM THE NEW-ENGLAND FARMER.]

A gentleman temporarily resident in the Havana, who is a very competent judge, states that the oxen in that country are of a superior character. They draw entirely by the horns, and are, properly speaking, not driven but led by a boy, who precedes them, holding a rope

fastened in a ring, which is passed through the cartilage of the nose; and they are trained to walk with as much speed as horses.

Every one who has seen an ox trot or run, must be satisfied that they were never formed for racers. Yet undoubtedly they might be trained and with advantage, to move much faster than at their ordinary gait among us, which is proverbially slow. It is worth considering whether the habits of thought and action among a rural population bear any correspondence to the habits of the domestic animals with whom they associate; and whether the habits of people accustomed to the quick movement of horses in working and riding, are not more active, spirited, and enterprising than of the people accustomed only to the slow movements of oxen, who as they are often trained and driven, do little more than creep.

It would seem to be time to get over the absurd prejudice which prevails among us, against working cows. On small farms especially, where the expense of keeping an ox team is always heavy, it would be a great gain to use them in this way. In many parts of Europe they are so used, and certainly may be so used with as much propriety as we use mares; who, with the exception of certain seasons, are as useful as horses—indeed more active and spirited, and quite as enduring. In respect to cows, all that would be required would be extraordinary care and kindness when far advanced with calf, and entire release from work for a short time before and after calving. The extraordinary feed which we could then afford to give them, would enable us to get almost as much milk from them as we now get. We wish some intelligent and respectable farmer would make a fair experiment in this matter. But with existing prejudices, which we know it would be very difficult to overcome, a man would almost as soon be seen driving a team of women in harness as a team of cows. We must beg pardon for the homely analogy or for even so much as hinting the possibility of, not to say the want of gallantry in the thought of driving women in or out of harness. It may sometimes be possible to lead them after the Havana fashion, with a silken cord. We presume to hazard no advice on the subject however.

Method of ascertaining the weight of Cattle while Living.

[FROM THE WHIP.]

This is of the utmost utility for all those who are not experienced judges by the eye; and by the following directions the weight can be ascertained within a mere trifle. Take a string, put it round the beast, standing square, just behind the shoulder blade; measure on a foot-rule the feet and inches the animal is in circumference: this is called the girth: then with the string measure from the bone of the tail which plumbs the line with the hinder part of the buttock; direct the line along the back to the forepart of the shoulder blade; take the dimensions on the foot-rule as before, which is the length, and work the figure in the following manner:—girth of the bullock, 6 ft. 4 in.; length 5 ft. 3 in.; which multiplied together, make 34 square superficial feet, that again multiplied by 23 (the number of pounds allowed to each superficial foot of all cattle measuring less than seven, and more than five feet in girth) makes 713 lbs. and allowing 14 lb. to the

stone, is 50 stone, 13 lb. Where the animal measures less than nine, and more than seven feet in the girth, 31 is the number of pounds to each superficial foot. Again, suppose a pig or any small beast should measure two feet in girth, and two feet along the back, which multiplied together, makes four square feet: that multiplied by eleven, the number of poands allowed for each square foot of cattle measuring less than three in girth makes 44 lbs., which divided by 14 to bring it to stones, is three stones two pounds. Again, suppose a calf, sheep, &c. should measure four feet six inches in girth, and nine inches in length, which multiplied together, makes sixteen and a half square feet: that multiplied by sixteen, the number of pounds allowed to all cattle measuring less than five feet, and more than three in girth, makes 26 pounds; which divided by 14, to bring into stones, is 18st. 12 lbs. The dimensions of the girth and length of black cattle, sheep, and calves, will be as exact, taken this way, as is at all necessary for any computation or valuation of stock, and will answer exactly to the four quarters, sink the offal, and which every man who can get a bit of chalk, may easily perform. A deduction must be made for a half fatted beast, of one stone in twenty, from that of a fat one; and for a cow that has had calves, one stone must be allowed, and another for not being properly fat.

Statistics of Cotton.

[FROM THE SOUTHERN CULTIVATOR.]

Mr. Clayton,—In my last I stated the estimate of the *foreign exports* of cotton in the world, at 550 millions of pounds. The entire growth of cotton in the world, is set down at 1,000,000,000 lbs. Of this, 550 millions are supposed to be grown in the United States—30 in Brazil; 8 in the West-Indies; 27 in Egypt; 36 in the West of Africa; 190 in the West of Asia; 35 in Mexico and South-America, except Brazil—and 14 millions elsewhere.

Thus, at 10 cents per pound, a price below which it has rarely ever fallen, this crop is worth $100,000,000. For the last fifty years, however, the value (though often fluctuating suddenly and widely) has averaged 19¼. At this price, the present growth of the world is worth $192,500,000.

Of this, about 350 millions of pounds are consumed and manufactured in England; about 150 millions in the United States, 80 in France, 250 in China and India, 35 in South-America and Mexico, including Brazil, 35 in Germany, 45 in Turkey and Africa, 10 in Spain, 20 in Pussia, and the remainder elsewhere.*

The value of cotton manufacturers in England, is believed to be annually about 170 millions of dollars—in France, 70 millions, and in the United States, 60 millions.

The capital employed in manufacturing by machinery, is estimated, in England, at 200 millions of dollars—in France, at 120 millions—in the United States at 110 millions.

The consumption in manufactures of raw cotton in all Europe, in 1803, was estimated at only 60 millions of pounds. (Dic. of Span. Com.) The whole consumption in Europe, in 1830, was about 387 millions of pounds. In 1838, it is believed to be nearly 500 millions of pounds.

* These estimates embrace the whole consumption in manufactures and otherwise.

South-Carolina and Georgia were the first States in this Union to grow cotton to any considerable extent, 1791, two millions of pounds were grown in the Union—1½ millions of which grew in South-Carolina, and half a million in Georgia.

In 1801, forty millions was the crop of the United States—of which 20 millions grew in South-Carolina, 10 in Georgia, 5 in Virginia, 4 in North-Carolina, and 1 in Tennessee.

In 1811, the crop of the United States had reached 80,000,000—of which, 40 grew in South-Carolina, 20 in Georgia, 8 in Virginia, 7 in North-Carolina, 3 in Tennessee, and 2 in Louisiana.

In 1821, one hundred and seventy millions of pounds were grown in the Union—as follows: 50 millions in South-Carolina, 45 in Georgia, 20 in Tennessee, 20 in Alabama, 12 in Virginia, 10 in North-Carolina, 10 in Louisiana, and 10 in Mississippi.

In 1826, the whole crop of the Union was 348¼ millions. Of this, Georgia grew 75 millions, South-Carolina 70, Tennessee 45, Alabama 45, Louisiana 38, Mississippi 20, Virginia 25, North-Carolina 18, Florida 2, and Arkansas ¼ of a million.

In 1833, the crop of the Union had increased to 437¾ millions. Of this, 88 millions grew in Georgia, 73 in South-Carolina, 70 in Mississippi, 65 in Alabama, 55 in Louisiana, 50 in Tennessee, 15 in Florida, 13 in Virginia, 10 in North-Carolina, and ¾ in Arkansas.

The next year, (1834,) the crop had increased to 457½ millions, and was grown as follows: 85 in Mississippi, 85 in Alabama, 75 in Georgia, 65½ in South-Carolina, 62 in Louisiana, 45 in Tennessee, 20 in Florida, 10 in Virginia, 9½ in North-Carolina, and ½ in Arkansas. Subsequently, no certain data are in our possession; but the estimate at this time is 550 millions as the whole crop of the Union.

Thus it will be seen, from 1791 to 1826, South-Carolina was the most abundant cotton growing State in the Union. In 1826, Georgia took the lead, and held it till 1834, when Alabama and Mississippi took the front rank. At this time, Mississippi is perhaps the most extensive cotton growing State in the Union. South-Carolina and Alabama are next. North Alabama is beginning to deteriorate as a cotton country; while the worn lands in Middle Tennessee are thought to improve for this culture—maturity, the vital desideratum, not being so easily allowable in the rank luxuriance of the fresher soils.

COTTON PLANT.

PART III.

MISCELLANEOUS INTELLIGENCE.

Agricultural Society of South-Carolina.

At their Anniversary Meeting on the 20th August last, the following Delegates to the General Convention, to be held in Columbia on the fourth Monday in November, were appointed, viz:—

Robert W. Roper,	James Rose,	John Ashe,
J. Harleston Read	Thos. Corbet, Jr.	H. A. Middleton,
F. D. Quash,	Wm. Washington,	W. Izard Bull,
A. H. Belin,	Edward Frost,	Fred'k Porcher.

The following Officers were elected, viz:

John Hume, *President.*
Hugh Rose, *Vice-President.*
R. W. Roper, *Corresponding Secretary.*
James Legare, *Treasurer.*
Joseph F. O'Hear, *Recording Secretary.*

Sunflower Oil.—Few individuals in the country are aware of the quantities of olive and almond oils, usually called sweet oils, imported annually into this country from abroad; and the number is perhaps still less who know that in the oil of the common sunflower seed, is found a substitute equal in every respect to the oils of France or Italy. Like all plants of such large and rapid growth that mature their seeds the first year, the sunflower exhausts soils rapidly, but where its cultivation has been attempted it has paid large profits. The oil is extracted as from linseed, and the cake or residuum is, like that, excellent for feeding cattle. The following extract is from a letter of J. Smith, Esq. of Maryland, to H. E. Ellsworth of Washington City.

"I planted about an acre of ground a few years since with sunflower, and obtained sufficient seed for near a barrel of oil. The oil was extracted by Mr. Barnett. We made use of it for the table, and found it kept well, and was esteemed equal to the best imported sweet oil for every domestic purpose I have a little of this making (1833) yet remaining and will send you a bottle by the first opportunity. I found the substance of the sunflower too exhausting for the tight soil we have on our hills in this neighborhood (Maryland) but have no doubt it will be found profitable in other sections of the country, and particularly in the rich prairies of the west."

Preservation of the Peach Tree.—This valuable fruit has for a considerable number of years past fallen a victim to a destructive insect that preys upon it near the root which is discovered by a gummy substance issuing from the trunk. Many recipes have been given to prevent and destroy this ruinous insect, but they do not appear, in many cases to have the desired effect. The writer of this had a favorite tree in his yard which has been for some years infested with these insects, and which he has taken great pains to remove by the application of ashes, lime, tar, &c., all of which have failed to answer the intended purpose. In the course of the last spring, when the leaves came out, they changed to a pale color, and to all appearance the tree was going to die. As a last resort for its restoration, he had recourse to charcoal; a small box was placed around the roots of the tree and filled with this article. It so far succeeded, that in a short time the tree revived, and took the second growth, and now is in a luxuriant state; the leaves are of a dark green color, and must surprise all who had previously seen it.—*Balt. Pat.*

Oyster Shells are frequently burnt into lime, to lay upon land. They are better manure when ground without burning, owing to the remains of animal matter in them. A good lime compost is the following: Spread on any platform under cover six inches of mould, then ihree inches of well burnt lime; slack it with water in which common salt has been dissolved, to the amount of 14 lbs. of salt to each bushel of lime; cover it with six inches more of mould. Before laying it on the land, turn and mix this compost heap, and lay 300 bushels of it on each acre.—*Dr. Hooper.*

Millet.—It is stated in a work on agriculture, that a gentleman in Pennsylvania sowed a peck to the acre the last of May—sowed four acres—cut middle of August, and suffered to dry in the sun for two or three days—produce seventy-five bushel of seed and one and a half tons of fodder to the acre. Cattle relish it. The produce per acre is frequently much greater than stated above. It is often cut in the milk. It is first sown in drills about three feet apart, and the plants should stand six inches from each other in the rows after hooing. In this latitude (New-Jersey) it may be sown from the middle of May to the 20th of June.

Corr. Farmer's Cabinet.

To Cure Salt-Rheum.—Take 1 quart of tar—add two gallons water—let it stand two or three days, stirring it occasionally—then rack or pour off the water, and put it into bottles. Take half a tea-cup full three times a day before eating, Tho following ointment, to be made and used externally, while drinking tar-water:—Take the yolk of an egg—the same size of fresh butter—half the size. of tar—one tea-spoonful pulverized cream of tartar. Mix them together with the point of a knife until it becomes a perfect salve. Anoint the parts affected three times a day with this ointment, and the cure is effected in two weeks. General Richard Shaw, of Newport, R. I. says he has by this remedy cured a number of persons of this fretting disease in two weeks, and has never known a failure, where the remedy was applied according to the directions.

S. H. Weed.

Extirpation of Garlick.—Thomas E. Bond, in the American Farmer, says he has wholly destroyed the wild onion, in fields which have been overrun with it, by first cultivating them in corn, and after the corn was gathered, ploughing the field again, and leaving it exposed the succeeding winter in the state the plough had left it.

Hay-Racks.—Hay-racks for feeding animals are best when placed in a vertical position, instead of inclining outwards, as in the former case, there is less liability of the hay being wasted, the heads of the animals will not become filled with hay-seed, and their breath will not ascend and render the hay offensive.

Genesee Farmer.

Pulverize the Soil.—Few farmers are probably fully aware of the vast importance of keeping the earth well pulverized, and especially in seasons of drought. It has been observed by the celebrated Mr. Tull, and by many others since his time, that thoroughly pulverizing the soil, and reducing it to a perfect tilth, increases and extends the pasture of plants. The soil thus pulverized more readily attracts the moisture, always floating in the atmosphere. Mr. Joseph Wimpey says, "I made several observations which clearly explain, to my own satisfaction, how dividing and pulverizing the soil becomes the proper mode of conveying the aliment prepared by nature for the sustenance of plants, into the bosom of the earth. One observation I will mention, as it is directly to the purpose. One evening, near the time of the men's leaving work, a smart shower of rain came on, which drove them off. They were digging one of the plots where beans had previously grown. The shower did not last more than half an hour. The next morning, as the men were digging, I observed that the rain had not penetrated above half an inch into the ground; I requested one of them to dig one or two spits of the ground that had been dug the day before, when it clearly appeared that the rain, in the new dug ground, had gone as deep as the spade, which was full twelve inches."—*Farmer's Cabinet.*

Geology, useful to the Farmer.—One advantage to the farmer from an acquaintance with the distribution of mineral masses, is the facility with which, in many instances, the injurious effects of small springs coming to the surface may be obviated. The theory of the earth's internal drainage is so simple that every man of common sense, by a knowledge of Geology, would be able to drain his

land upon sure principles, or else to know precisely why it cannot be drained. By this knowledge he would know what rocks existed under his land, at what depth, and in what position. Springs never issue from stratified masses, except from reservoirs produced from jointed rocks, and at the level of the overflow of these subterraneous cavities, falls in the strata very frequently. Limit these reservoirs and determine the points of efflux of the water; let those faults be examined, and the evil may be remedied immediately—but some geological information is needed there. And landed proprietors who think it less troublesome to employ an agent than direct such a simple operation, may profit by this hint, and at least select one who knows something of the rock he has to drain.

Another advantage to the agriculturalist from this sort of knowledge is, there is often, at small depths substances which, if brought up and properly mixed with the soil, will much enrich it. Also, in all experiments for the introduction of new modes of management with respect to earth and crops, it will be very useful to take notice of the quality of the soil, substrata and water, for these exercise a decisive and real influence over the result.

Statistical Tables —Extract from the speech of Mr. Caley, in the British House of Commons, on the debate relative to the Corn Laws, March 12, 1839.

National debt of England and other countries, with the proportion of such debts which falls on each individual.

		Debt per head Proportion of		
	£	£	*s.*	*d.*
England,	800,000,000	32	0	0
France,	194,400,000	5	19	7
Russia,	35,550,000	0	11	9
Austria,	78,100,090	2	7	6
Prussia,	29,701,000	2	7	7
Netherlands,	148,500,000	23	5	5
Spain,	70,000,000	5	0	8
United States,	———	—	—	—
Sicilies,	18,974 000	2	11	2
Bavaria,	11,311,000	2	16	0
Sardinia,	4,584,000	1	1	2
Turkey,	3,667,000	0	7	8
Sweden,	———	—	—	—
Portugal,	5,649,4000	1	2	0
Denmark,	3,799,000	1	18	4
Rome,	17,142,000	7	9	0
Poland,	5,740,000	1	3	3
Saxony,	3,300,000	2	9	1
Hanover,	2,284,000	1	11	0
Baden,	1 670,000	1	9	2
Wirtemberg,	2,505,000	1	12	7
Tuscany,	1,384,000	1	4	11
Hesse, (Darmstadt)	1,184,000	1	3	11
Hesse, (Electorate)	220,000	0	1	1
Switzerland,	———	—	—	—
Norway,	252.000	0	9	1
East India Company's Territories,	47,609,000	0	9	0

Comparative wages of English and Foreign Operatives.

Operatives are paid in			
France,	5s. 6d.	pr. week of	72 hours.
Switzerland,	5s. 5d.	"	82 "
Austria,	4s. 0d	"	76 "
Tyrol,	3s. 9d.	"	88 "
Saxony,	3s. 6d.	"	72 "
Bona, on the Rhine,	2s. 5d.	"	84 "

The average wages being a fraction under 4s. per week. The average wages paid to hands similarly employed in England, but for fewer hours, being 12s. a week.

The following information is from returns made to the Post Office Department, and has been politely handed us for information:

Newspapers, Magazines and Periodicals, published in the United States, 1st July, 1839.

Maine,	41
New-Hampshire,	26
Vermont,	31
Massachusetts, at Boston, 65,	124
Rhode-Island,	14
Connecticut,	21
New-York, at New-York City, 71,	274
New-Jersey,	39
Maryland, at Baltimore, 20,	48
Pennsylvania, at Philadelphia, 71,	253
Delaware,	3
District of Columbia, at Washington, 11,	16
Virginia, at Richmond, 10,	52
North-Carolina,	30
South-Carolina,	20
Georgia,	33
Florida Territory,	9
Alabama,	34
Mississippi,	36
Louisiana, at New-Orleans, 10,	26
Arkansas,	4
Tennessee,	50
Kentucky,	31
Ohio, at Cincinnati, 27,	164
Michigan,	31
Wisconsin Territory,	5
Iowa Territory,	8
Indiana,	69
Illinois,	33
Missouri,	25
	1555

Of the above 116 are published daily, 14 tri weekly, 30 semi-weekly, and 991 once a week. The remainder are issued semi-monthly, monthly, and quarterly, principally Magazines and Reviews. Many of the daily papers also issue tri-weeklys, semi-weeklys, and weekly. Thirty eight are in the German language, four in the French, and one in the Spanish. Several of the New-Orleans papers are printed in French and English.—*Wash. Globe.*

ERRATA.

In page 474, line 13 from the foot, for "high" read *nigh.*
" " " 8 " insert *a comma* after "*all,*"
" " " 2 " insert *a comma* for a semicolon.
" " last line, for "invested," read *enriched.*